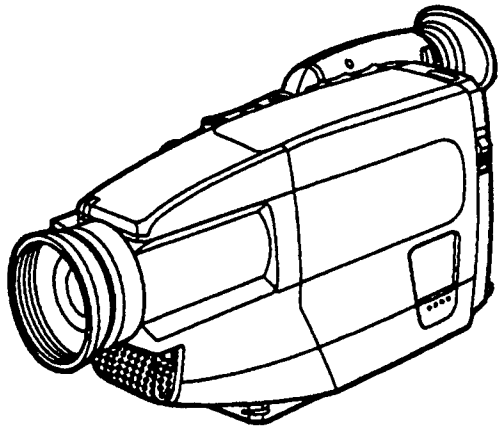
HITACHI

TK | No.6312E

SERVICE MANUAL
Wartungsanleitung

VM-E53E,E(UK), E(SW),E(AU)



MANUAL RELATED TO THE VM-E53E

TITLE	MODEL	MANUAL No.
Service Manual	VM-AC90E	No. 6324E, G, F

Anleitung betreffend Modell VM-E53E

Titel	Modell	Anleitungs-Nr.
Wartungsanleitung	VM-AC90E	Nr. 6324E, G, F

8

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT
Änderungen der Technischen Daten und Teile im Sinne ständiger Verbesserung vorbehalten.

8mm VIDEO CAMERA/RECORDER
8-mm-Video-Kamerarecorder

June 1993 TOKAI Consumer Electronics Division

ENGLISH

CONTENTS

CHAPTER 1

COMPARISON WITRH PREVIOUS MODEL E1-1
SERVICE MANUAL ABBREVIATION LIST E1-2
WHEN USING THIS SERVICE REFERENCE MATERIAL . E1-4
JIG AND TAPES FOR ADJUSTMENT E1-8
HOW TO USE THE EXTENSION CABLE E1-9

CHAPTER 2

DISASSEMBLY

1. IDENTIFICATIONS OF MAJOR COMPONENTS E2-1
 1.1 Major Components and Circuit Boards .. E2-1
 1.2 Major Tape Transport Mechanism Components E2-4
2. HOW TO SET TO THE EJECT STATE MANUALLY .. E2-5
3. NORMAL DISASSEMBLY METHOD
 3.1 Cases and Circuit Boards E2-6
 3.2 Electronic Viewfinder (EVF) Block E2-13
 3.3 Lens Block E2-14
4. TAPE TRANSPORT MECHANISM DISASSEMBLY E2-15
 4.1 Cassette Holder, Motors, Sensors and Circuit Boards E2-15
 4.2 Others Parts E2-19

CHAPTER 3

MECHANISM ADJUSTMENT

1. MAJOR MECHANICAL COMPONENTS E3-1
2. BEFORE STARTING ADJUSTMENT E3-1
3. PHASE MATCHING IN ASSEMBLY E3-2
 3.1 Mechanism State Switch [Mecha. State Sw] E3-2
 3.2 Loading Gears and Loading Ring E3-2
4. TAPE TRANSPORT SYSTEM CHECK/ADJUSTMENT .. E3-3
 4.1 Tension Pole Position/Tension Torque Adjustments E3-3
 4.2 Pull-out Pole and Impedance Roller Height Check/Adjustment .. E3-4
 4.3 Supply/Take-up Guide Roller Height Adjustment E3-4
5. ADJUSTMENT AFTER REPLACING THE CYLINDER . E3-5
6. CHECKING THE TORQUE E3-6
7. MODIFICATION TO ATF-R JIG E3-6

MECHANICAL BLOCK MAINTENANCE/ INSPECTION PROCEDURE E3-7

CHAPTER 4

ELECTRICAL ADJUSTMENT

1. CONNECTION FOR ADJUSTMENT E4-1
2. CAMERA SECTION ADJUSTMENT E4-2
 2.1 Circuit Board Locations E4-2
 2.2 Test Equipment and Charts Necessary for Adjustment E4-2
 2.3 Adjustment Condition E4-2
 2.4 Preset Positions of Switches and Controls During Adjustment ... E4-2
 2.5 List of Charts for Camera Adjustment . E4-2
 2.6 Adjustments After Replacing Major Components in the Camera Section .. E4-3
 2.7 Camera Section Adjustment Procedure .. E4-3
 2.8 Electronic Viewfinder (EVF) Adjustment E4-17
3. VTR SECTION ADJUSTMENT
 3.1 Circuit Board Locations E4-19
 3.2 Test Equipment and Alignment Tapes Necessary for Adjustment E4-19
 3.3 Adjustment Condition E4-19
 3.4 Preset Positions of Switches and Controls During Adjustment ... E4-19
 3.5 Adjustment Components Locations E4-20
 3.6 Adjustments After Replacing Major Components in the VTR Section .. E4-21
 3.7 System Control/Servo Adjustment E4-21
 3.8 Luminance/Chroma Circuit Adjustment .. E4-23
 3.9 Audio Circuit Adjustment E4-26
4. ERROR MESSAGES E4-27
 4.1 Error Messages in Camera Electric Volume and Digital Adjustments E4-27
 4.2 Error Messages in Autofocus and Electronic Stabilizer Adjustments .. E4-28
 4.3 Error Messages in VTR Adjustment E4-29
 4.4 Troubleshooting of Autofocus E4-30
 4.5 Troubleshooting of VTR E4-40

CHAPTER 5

SCHEMATIC & CIRCUIT BOARD DIAGRAMS

INTERNAL WIRING DIAGRAM 5-1

	SCHAMTIC DIAGRAM	CIRCUIT BOARD DIAGRAM
SENSOR	5-3	5-47
SENSOR DRIVE	5-5	5-35
PROCESS	5-7	5-35
DIGITAL PROCESS	5-9	5-35
WIRING/SWITCH UNIT	5-11	——
JACK	5-11	5-35
REC SW /BATT.	5-12	5-35
SERVO	5-13	5-35
SYSTEM CONTROL	5-15	5-35
TROUBLE SENSOR	5-17	5-47
AUDIO	5-19	5-35
DC-DC CONVERTER	5-21	5-35
PRE AMP	5-23	5-35
1H DELAY	5-27	5-35
SKEW COMP.	5-28	5-35
LUMINANCE/CHROMA	5-29	5-35
AUTO FOCUS	5-31	5-35
ELECTRONIC VIEWFINDER (EVF)	5-33	5-34

WAVEFORM
 SENSOR 5-4
 PROCESS 5-4
 SERVO 5-13
 SYSTEM CONTROL 5-17
 PRE AMP 5-25
 LUMINANCE/CHROMA 5-26
 ELECTRONIC VIEWFINDER (EVF) 5-33

CHAPTER 6

EXPLODED VIEWS
 CABINET SECTION 1 (LEFT CASE & VTR BLOCK) .. 6-1
 CABINET SECTION 2 (RIGHT CASE) 6-2
 CAMERA BLOCK SECTION 6-3
 CHASSIS SECTION 6-4
 ELECTRONIC VIEWFINDER (EVF) SECTION 6-5
 LENS BLOCK SECTION 6-5
 ACCESSORIES 6-6

CHAPTER 7

REPLACEMENT PARTS LIST 7-1

CHAPTER 8

BLOCK DIAGRAMS 8-1
CONTROLS AND FUNCTIONS E8-14
DATE/TIME SETTING E8-15
TROUBLESHOOTING E8-16

SPECIFICATIONS

■ **General**

Power requirements	6V DC
Power consumption	5.3 watts (when recording)
Operating temperature	0°C to 40°C
Operating humidity	<80%
Storage temperature	−20°C to 50°C
Dimensions	91(W) x 116(H) x 205(D) mm
Weight	Approx. 710 gr (without battery pack, lens hood, lens cap and cassette)

■ **Video Recorder Section**

Format	8mm
Record/playback system	Two video record/playback heads
Video signal	PAL colour & CCIR monochrome signals 625 lines
Tape speed	SP: 20.05 mm/sec.
Video output	1.0 Vp-p, 75 ohm
Audio output	−8 dBs, less than 1K ohm
Fast forward/rewind time	Less than 8 minutes with P5-90 cassette

■ **Camera Section**

Scanning	625 lines/50 fields/25 frames
Required minimum illumination	2 lux
Camera device	1/3" C.C.D
Lens diameter	34 mm

CAUTION

Lithium battery; danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacuturer's instructions.

SAFETY PRECAUTIONS

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety-related characteristics, always use genuine Hitachi replacement parts. Especially critical parts in the power circuit block should not be replaced with other makers'. Critical parts are marked with ⚠ in the schematic diagram.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without any danger of electrical shock.

COMPARISON WITH PREVIOUS MODEL

← : Same as VM-E31E

ITEM	VM-E31E	VM-E53E
GENERAL		
POWER REQUIREMENTS	6V DC	←
POWER CONSUMPTION	6.1 W	5.3 W
DIMENSIONS (W X H X D mm)	112 X 114 X 174	91 X 116 X205
WEIGHT	Approx. 810 g	Approx. 710 g
OPERATION TEMPERATURE	0℃ to 40℃	←
STORAGE TEMPERATURE	-20℃ to 50℃	←
VIDEO RECORDER SECTION		
FORMAT	8mm	←
RECORD/PLAYBACK SYSTEM	Two video record/playback heads	←
VIDEO SIGNAL	PAL colour & CCIR monochroma signals 625 lines.	←
TAPE SPEED	SP : 20.05 mm/sec. LP (playback only) : 10.06mm/sec.	SP : 20.05 mm/sec.
VIDEO OUTPUT	1.0Vp-p, 75 ohm	←
AUDIO OUTPUT	-8dBs, less than 1K ohm	←
FAST FORWARD/REWIND TIME	Less than 10 minutes with P5-90 cassette	Less than 8 minutes with P5-90 cassette
HEAD WHEEL	40 mm	←
BASIC CHASSIS TYPE	TL-R	TH
CAMERA SECTION		
SCANNING	625 lines/50 fields/ 25 frame	←
REQUIRED MINIMUM ILLUMINATION	2 lux	←
CAMERA DEVICE	1/3" C.C.D	←
LENS DIAMETER	34 mm	←
ZOOM RATIO/APERTURE	8:1 (6.7mm - 54mm) F1.8	8:1 (6mm - 48mm) F1.4
FEATURES		
WHITE BALANCE	AI Auto white balance	←
DIGITAL SIGNAL PROCESSOR	Yes	←
ELECTRICAL ZOOM	x16	x24 (16 x INST. ZOOM 1.5)
INSTANT (INST.) ZOOM	No	Yes (x1.5)
ELECTRONIC IMAGE STABILIZER	No	No
AUTOFOCUS SYSTEM	IR AF	VIDEO AF
PROGRAMME AE (SHUTTER SPEED)	Yes (AE/50/100/250/1000/ 2000/10000)	Yes (Progamme AE only)
TITLER	Yes	← (Only on the remote control)
FADE	Yes	No
MANUAL/AUTO FOCUS	Selective	Auto mode only
CAMERA LIGHT SHOE (DC LIGHT)	No	Yes
WIND (MIC) SWITCH	No	←
EXT. MICROPHONE JACK	No	←
PHONES (HEAD PHONE) JACK	No	←
ACCESSORIES		
WIRELESS REMOTE CONTROL	Yes	←
BATTERY PACK	VM-BP82	←
AC ADAPTER/CHARGER	VM-AC80E(R)	VM-AC90E
EXTERNAL POWER ADAPTER	Yes	←
AV OUTPUT CABLE	Yes [Monoural Type]	←

SERVICE MANUAL ABBREVIATION LIST

A	
ACC	Automatic Color Control
ACK	Automatic Color Killer
ADC B-Y	Analog to Digital Converted B-Y Signal
ADC R-Y	Analog to Digital Converted R-Y Signal
ADC Y	Analog to Digital Converted Luminance
ADD	Adder
ADRS	Address
A.DUB	Audio Dubbing
AF	Autofocus
AFC	Automatic Frequency Control
AGC	Automatic Gain Control
AGC KILLER	AGC Killer Voltage
ALC	Automatic Level Control
AIC	Automatic Iris Control
AM	Amplitude Modulation
AMP	Amplifier
APC	Automatic Phase Control
ASBL	Assemble (Phase Matching)
AUD.	Audio
AUX	Auxiliary
A5V	Always 5V B+ Source
B	
B (BLU)	Color Signal BLUE
BATT.	Battery
BF	Burst Flag
BG	Burst Gate or Back Ground
BGP	Burst Gate Pulse
BH	Power Supply for Selecting VHF High Band
BL	Power Supply for Selecting VHF Low Band
BLK	Blanking
BM	Power Supply for Selecting VHF Mid Band
BPF	Bandpass Filter
BS	Power Supply for Selecting VHF Super Band
BU	Power Supply for Selecting UHF Band
BU	Back-up
BUF.	Buffer Amplifier
B-YL	Battery
C	
C	Chroma
C (CHROMA)	Chrominance Signal
CAPST.	Capstan
CAS	Column Address Strobe
CARRI.	Carrier
CATV	Cable TV
C.BLANK	Chroma Blanking
C.BLK	Composite Blanking
CCD	Charge Coupled Device
CG	Character Generator
C.FG/CFG	Capstan Frequency Generater
C.FREE RUN	Chapstan Free Run
CH	Channel
CHD	Camera Horizontal Drive Pulse
CHAR.	Character
CHROMA	Chrominance
C.MEMORY	Counter Memory
CNR	Chroma Noise Reducer
COM.	Common
COM.	Composite
COMPA	Comparator
COMPE	Compensator
COMPO	Composite
COMP-EXP	Compressor-Expander
CONV.	Converter
CONT	Control
CORR.	Correlation
COUNT.	Counter
CP	Clamp Pulse
C.PAUSE	Camera Pause
C/R	Capacitor/Resistor
C.RESET	Counter Reset
C.REVERSE	Count Reverse
CST	Cassette

C	
C.SYNC	Composite Synchronizing Signal
CTL	Control Track Pulse (Control)
CYL	Cylinder
CY (CYAN)	Color Signal CYAN
D	
DA	Double Azimuth
D/A	Digital to Analog Converter
D-D	Direct Drive
DEEMPHA.	Deemphasis
DEF	Deflection
DEMOD.	Demodulator
DEMPX	Demultiplexer
DET	Detector
DIFF. AMP	Differential Amplifier
DISCRI.	Discriminator
DISP.	Display
DL	Delay Line
DN	Down
DO	Dropout
DOC	Dropout Compensator
DRAM	Dynamic Random Access Memory
D.REF 25/30	Delayed Reference 25/30Hz
D.SW 25/30	Delayed Switching 25/30Hz
DSP	Digital Signal Processor
DT/OE	Data Transfer/Output Enable
D/W	Dark/White
DWC	Delayed Write Clock
E	
EA-ROM	Electrically Alterable Read Only Memory
E-E	Electronic-to-Electronic
EMPHA.	Emphasis
EQ	Equalizer
EVF	Electronic Viewfinder
EXT.	External
F	
F.ADV	Frame Advance
F/V	Frequency-to-Voltage Converter
FB	Feed Back
FF	Flip Flop
F.FWD	Fast Forward
FG	Frequency Generator
FM	Frequency Modulation
FREQ.	Frequency
FRAME ADV	Frame Advance
Fsc	Color Sub Carrier Frequency
FWD	Forward
G	
GEN	Generator
GND	Ground
H	
H	Horizontal
HBF	Horizontal Burst Flag
HD	Horizontal Drive
Hi-Fi	High Fidelity
HLT	Halt
HPF	High-pass Filter
HPL	High-pass Limiter
HSS	Horizontal Sync. Separator
I	
IF	Intermediate Frequency
INC	Row Counter Increment
INDI.	Indicator
INT.	Internal
INV.	Inverter
I/O	In/Out (Input/Output)
IR	Infrared Rays
IRIS DET	Iris Detection
IRT	Instant Recording Timer
L	
LCD	Liquid Crystal Display
LIN.	Linear
LM	Loading Motor

L	
LNC	Line Noise Canceller
LOG	Logarithm
LP	Long Play
LP (H)	Long Play Signal (Active High)
LPF	Low-pass Filter
LUMA	Luminance
L/R	Left/Right
M	
MAN	Manual
M.BRAKE	Main Brake
M.CUT	Monitor Cut
MEM.	Memory
MEM ON	Memory ON
MEM SW	Memory Switch
MEM VIDEO	Memorized Video
MIX	Mixer
MMV	Monostable Multivibrator
MOD.	Modulator
MPX	Multiplex
MPX VIDEO	Multiplexed Video
M.STATE	Mechanism State
M.STOP	Memory Stop
MTS	Multi Channel Television Sound
N	
NEG	Negative
NFB	Negative Feed Back
NORM. or NOR.	Normal
NR	Noise Reduction
O	
OB	Optical Black
O/E	Odd/Even Field
OSC	Oscillator
OSD	On-Screen Display
P	
PB/PLAY	Playback
P.CONT	Power Control
PIF	Picture Intermediate Frequency
PG	Pulse Generator
P IN P	Picture in Picture
PIX MOVE	Picture Move
PLL	Phase Locked Loop
POS.	Positive
POWER CONT.	Power Control
PROG.	Program
PROTECT.	Protector
PWM	Pulse Width Modulation
R	
R (RED)	Color Signal RED
RAM	Random Access Memory
RAS	Row Address Strobe
RC	Reading Clock
RCC	Reading Clock Clear
RCR	Row Counter Reset
REC	Record
RECT.	Rectifier
REF	Reference
REF 25/30	Reference 25/30Hz from servo circuit
REG	Regulator
REL	Refresh Control
REW	Rewind
REV	Reverse
RF	Radio Frequency
RM	Reel Motor
ROM	Read Only Memory
R-YL	Color Difference Signal R-YL
S	
SAP	Second Audio Program
SAW	Sawtooth
SC	Serial Control
SC1 (0°)	3.58MHz Subcarrier Signal 1 (0-degree Phase Shifted)

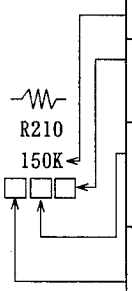
S	
SC2 (90°)	3.58MHz Subcarrier Signal 2 (90-degree Phase Shifted)
SEP.	Separator
SG	Signal Generator
S/H	Sample and Hold
SIF	Sound Intermediate Frequency
SOL	Solenoid
SP	Standard Play
SP/LP	Standard Play/Long Play
S.REEL	Supply Reel Sensor
SRCH	Search
SRV	Servo
STABI.	Stabilizer
S.TRACK	Slow Tracking
STBY	Standby Mode
S-VHS	Super VHS
SW 15Hz	15Hz Head Switching Pulse
SW 25/30Hz	25/30Hz Head Switching Pulse
SYNC	Synchronizing signal
SYS.CON	System Control
T	
T (TELE)	Telephoto Angle
T.BRAKE	Take-up Brake
T/L	Tuner/Line
TP	Test Point
T.REEL	Take-up Reel Sensor
T.RESET	Timer Reset
TRS	Transfer
TμP	Timer Microprocessor
TU-μP	Tuning Microprocessor
U	
U/D	Up/Down
UNI.	Unified
V	
V (VERT)	Vertical
VAR	Variable
V.AGC	AGC Voltage
VCA	Voltage Controlled Amplitier
VCO	Voltage Controlled Oscillator
V.DRV	Vertical Drive Pulse
V.DUB	Video Dubbing
V/F	Voltage to Frequency Converter
VHS	Video Home System
VF	Focus Voltage
VOL.	Volume
V-REF	Voltage Reference
VP	Vertical Pulse
VSS	Vertical Sync. Separator
Vss	Voltage Super Source
VT	Tuning Voltage
VT-U	Tuning Voltage-UHF
VT-V	Tuning Voltage-VHF
VCXO	Voltage Controlled Crystal Oscillator
W	
WC	Write Clock
WCC	Write Clock Clear
WE	Weighting
WHT	Color Signal WHITE
WIDE	Wide Angle
WHD	Wide Horizontal Drive
WHT BAL CONT.	White Balance Control
Y	
Y	Luminance Signal
Y/C	Luminance/Chrominance
YE (YEL)	Color Singal YELLOW
YL	Luminance Signal (Low Component)
ANOTHER	
μP	Microprocessor
5V	ON 5V B+ Source
9V	ON 9V B+ Source

WHEN USING THIS SERVICE REFERENCE MATERIAL

1. How to Read Abbreviations

Values, dielectric resistances (power capacitances), tolerances, grades of resistors (excluding variable resistors, etc.) and capacitors are indicated in the schematic diagrams using abbreviations. Collate these abbreviations and the following tables to read abbreviations and replace parts correctly.

[RESISTORS]

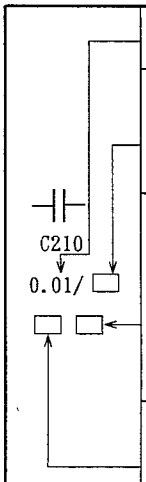


Value	No indication ····· ohm K ····· kohm
Tolerance	No indication ····· ± 5% K ····· ±10% M ····· ±20%
Power capacitance	No indication ····· 1/8W (All capacitances other than 1/8W are indicated in schematic diagrams with W omitted.)
Type	No indication ··· Carbon film fixed RC ····· Carbon solid RW ····· Power-type wire wound solid RS ····· Metal oxide film solid RN ····· Metal film solid

Example

R210
150K ····· 150 kohm, carbon solid
RC.1/2.K 1/2W, ±10%

[CAPACITORS]



Value	No indication ····· μF P ····· PF
Dielectric resistance	No indication ····· 50WV (All resistances other than 50WV and those of electrolytic capacitors are indicated with WV omitted.)
Tolerances	No indication ····· ±10% J ····· ± 5% M ····· ±20% C ····· ±0.25PF Z ····· +80%-20% (No indication for electrolytic capacitors. (excluding tantalum and high stability electrolytic capacitors.)
Type	No indication ··· Ceramic, general electrolytic (see circuit symbol to distinguish from ceramic.) MYL ····· Mylar (Polyester film) STY ····· Styrol TA ····· Tantalum KU ····· High stability electrolytic MP ····· Metallized paper

Example

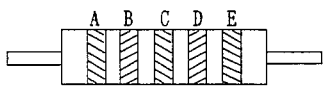
C210
0.01/25 ····· Mylar, 0.01μF, 25WV
MYL.J ±5%

2. Markings in Schematic and Circuit Board Diagrams

(1) Parts with marks "■" attached to circuit numbers in the schematic and circuit board diagrams are discrete components.
(2) Parts with marks "●" attached to circuit numbers in the schematic and circuit board diagrams are chip components.
(3) Parts with marks Ⓩ in the circuit board diagrams are leadless jumpers.

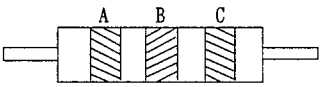
3. How to Read Capacitance of Resistance-Type Capacitors and Coils

[CAPACITOR]



CAPACITY : (10A+B)×C (PF)
TOLERANCE : D
RATED VOLTAGE : BODY COLOR
PINK : 25V
GREEN : 50V
CHARACTERISTICS : E

[COIL]



INDUCTANCE : (10A+B)×C (μH)

COLOR	A, B	C	D	E
Black	0	10^0	±20%	For temperature compensation
Brown	1	10^1		
Red	2	10^2		
Orange	3	10^3		
Yellow	4	10^4		
Green	5	10^5		
Blue	6			
Violet	7			
Gray	8		±30%	High dielectric constant type
White	9			For temperature compensation
Gold		10^{-1}	± 5%	
Silver		10^{-2}	±10%	High dielectric constant type

4. Cautions on Use of MOS ICs

(1) MOS ICs are inserted in black foam for shipment. This foam is a conductor which short-circuits between the leads to prevent damage. Do not remove ICs from this foam during storage. Avoid removing ICs from this foam, placing them on plastic which is likely to be charged with static electricity or inserting them into styrol foam.
(2) High voltages may be applied during soldering caused by leakages from the soldering iron. Be sure to ground the tip of the soldering iron or use a low voltage soldering iron.
(3) The human body and clothes made of synthetic fiber or nylon gloves may be charged with several thousand volts of static electricity because of friction. Workers should be grounded.

LEADLESS (CHIP) COMPONENT IDENTIFICATION

1. Leadless Transistor

The part name of a leadless transistor is indicated by a code on its surface, using one letter, one letter and one numeral, two letters, two letters and one numeral, two numerals, two numerals and one letter, three letters, or four letters.

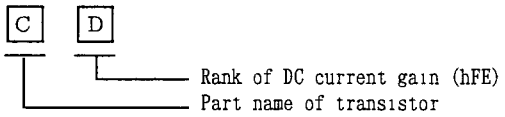
Note: There are transistors with the same code but differnt part names, or with the same part name but different codes. Refer to the parts lists to finally identify a transistor.

CODE	PART NAME	CODE	PART NAME
Leadless (Chip) Transistor			
3925	2SC3925	BR	2SC2412K
1CQ	2SB902	BR	2SC4617
1D	2SC3127	BS	2SC2412K
1DS	2SD1328S	C-7	2SA811
1DT	2SD1328	C1G	KSC1623
1R	2SB970TX	CB	2SC3646
2BQ	2SK374PQ	CC	2SA1122C
2BR	2SK374QR	CC	2SC3647T
2Y	2SC3757	CC	2SC3647
2YQ	2SC4691	CD	2SA1122D
3N	2SK620	CE	2SA1122E
4N	XN5601	CK	2SD999
4Q	XN1B301	CP	2SC4097
4R	XN1C301	CQ	2SC2411K
5C	XN4601	CR	2SB710
5C	XP4601	CR	2SC2411
5H	XP4501	CR	2SB1219
5H	XN4501	D16	2SC1622A
5K	XP4401	D17	2SC1622A
5K	XN4401	D18	2SC1622A
5L	XN5501	DB	2SD1766
5N	XN6501	DE	2SC2463
5O	XN6401	DF	2SD1623
5R	XP1501	DF	2SD1898
5R	XN1501	DG	2SD1624
5S	XN1504	DK	2SB798
5V	XN1401	EC	2SA1022
5W	XN2501	F-2	2SC1009F2
5X	XN4504	F-3	2SC1009F3
7R	XN2401	F-4	2SC1009F4
7S	XN1601	FC	2SC2619
AA	2SD1757K	FR	2SA1774
AKQ	2SA1738	FR	2SA1037K
AKQ	2SA1806	FR	2SA1576R
AL	2SA1791	FS	2SA1037K
AM	2SC4656	GC	2SC2734
AO	2SB709AQR	GM	3SD1615
AQ	2SB709AQ	HQ	2SA1036K
AQ	2SB766	IC	2SC3016
AR	2SB1462	IRD	2SA1484
AR	2SB766	IS	2SB792S
AR	2SB709ARS	IT	2SB792T
AR	ASB1218R	L-4	2SC1623L4
AS	2SB766	L-5	2SC1623L5
AS	2SB709AS	L-6	2SC1623L6
B3	2SC1621B3	L-6	2SC2812L6
B4	2SC1621B4	L-7	2SC2812L7
BC	2SB1188	L5	MMBC1623L5
BD	2SB1121	L6	MMBC1623L6
BE	2SB1260	LB	2SC2462B
BF	2SB1123	LC	2SC2462C
BF	2SB1308	LD	2SC2462D
BG	2SB1124	LR	2SC2412KLN
BH	2SB1001	M-5	2SA812
BQ	2SB709A	M-6	2SA1179
BR	2SC4081R	MC	2SA1052MC

CODE	PART NAME	CODE	PART NAME
Leadless (Chip) Transistor			
MD	2SA1052MC-D	ZS	2SD874S
N3	2SC1653	VR	2SD968A
ND	2SD1306ND	W1	FMW1
NE	2SD1306NE	W10	FMW10
PD	2SA1171D	W2	FMW2
PS	2SD814	W3	FMW3
QB	2SC2620QB	WR	2SD602
QC	2SC2620QC	X1	UMX1
QO	2SC2714	X1	IMX1
R22	2SC4226	X2	IMX2
R22	2SC3356	Y1	FMY1
R32	2SC4227	Y12	2SA1464
R34	2SC3583	Y25	NTM3906
R42	2SC3585	Y3	FMY3
RB	2SC2618RB	YCD	2SK197
RC	2SC2618RC	YI	2SA1666
RK	2SC3357	YQ	2SD601YQ
S1	FMS1	YR	2SD601YR
S2	FMS2	YR	2SD1819R
SC	2SA1121	YR	2SD2216
SO	2SA1162	YS	2SD601YS
SP	2SC3082K	Z1	IMZ1
T1	IMT1	Z2	IMZ2
T1	UMT1	ZO	2SD874T
T2	IMT2	ZQ	2SD601A
UD	2SC2404	ZR	2SD874R
Digital Transistor			
3	DTC143TK	6C	UN9113
4	DTC114TK	6S	XP4113
6	DTC144TK	8B	UN5212
13	DTA143EK	8C	UN9213
14	DTA144EK	8C	UN2213
15	DTA124K	8S	XP4213
15	DTA124EU	9L	XP1213
16	DTA144EU	9L	XN1213
16	XDA144EK	A1	FMA1
16	DTA144EE	A1	UMA1
23	DTC143EK	A2	FMA2
24	DTC114EU	B2	UMB2
24	DTC144EK	B2	IMB2
25	DTC124EU	C2	FMC2
25	DTC124K	C5	FMC5
26	DTC144EE	D2	IMD2
26	DTC144EU	F52	DTB123
26	XDC144EK	G1	FMG1
33	DTA143XK	G2	FMG2
43	DTC143XK	G21	DTD113ZK
52	DTA123YK	G5	FMG5
60	UN511F	H03	DTC343TK
64	DTC114YK	H2	IMH2
80	UN521F	H2	UNH2
4P	XN1A312T	H27	DTC363EK
6B	UN5112	R04	KSR1104
6C	UN2113	R31	FP1L2Q
FET			
30	2SK621	WS	2SK322T
1FQ	2SK321FQ	WT	2SK322T
1FR	2SK321FQR	X15	2SK425
1KP	2SK316	X4	2SK94
2BQ	2SK663	XAF	2SK980FG
DY	2SK1579	YC	2SK197YC
JO	2SK208	YD	2SK197YD
K	3SK166	YE	2SK197YE
K4	2SK160K4	ZD	2SK217ZD
K5	2SK160K5	ZE	2SK217ZE
KB	2SK323		

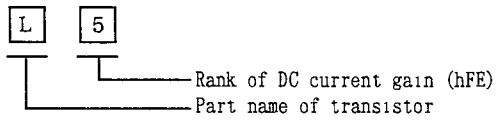
(1) Identification with two letters
Use this code and the following chart for transistor identification.
Example :

Code	Part name
CD	2SA1122D
LD	2SC2462D



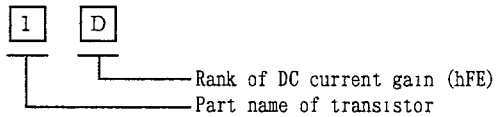
(2) Identification with one letter and one numeral
Use this code and the following chart for transistor identification.
Example :

Code	Part name
L5	2SC1623(5)
L6	2SC1623(6)



Example :

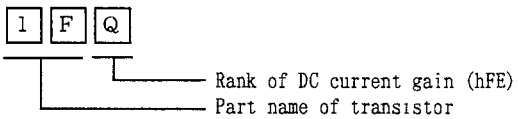
Code	Part name
1D	2SC3127D



Note: Codes S1,S2,T1,W1,W2,W3,X1,Y1,Y3,Z1 and Z2 encode only the part names.

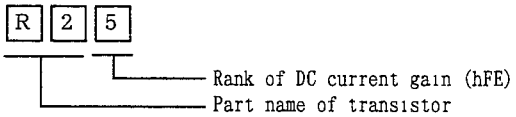
(3) Identification with one numeral and two letters
Use this code and the following chart for tarnsistor identification.
Example :

Code	Part name
1FQ	2SK321Q



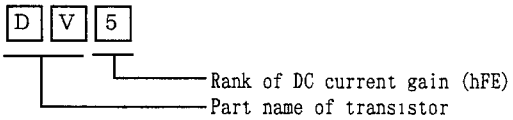
(4) Identification with one letter and two numerals
Use this code and the following chart for transistor identificaion.
Example :

Code	Part name
R25	25C3356



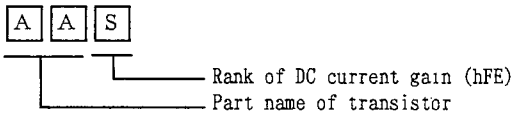
(5) Identification with to letters and one numeral
Use this code and the following chart for transistor identification.
Example :

Code	Part name
DV5	2SD596



(6) Identification with three letters
Use this code and the following chart for transistor identification.
Example :

Code	Part name
AAS	2SD1757KS



2. Leadless Diode
The part name of a leadless diode is indicated by a code on the surface, using one letter and one numeral, two letters, two letters and one numeral, two numerals and one letter, or three numerals. Use this code and the following table to identify the part name of a diode.

Note: Refer to the parts lists to finally identify a diode.

CODE	PART NAME	CODE	PART NAME
Diode			
0	HVU300A	3D	RB715F
1.0	1SV201	3.0L	MA3030L
2.0	MA3020	3.6L	MA3036L
5.1	MA3051L	3.9L	MA3039L
5.1	MA3051M	4.3H	MA3043H
6.8	MA3068	4.3L	MA3043L
6.8	MA3068M	4.3M	MA3043M
7.5	MA3075L	4.7L	MA3047L
8.2	MA3082M	4.7M	MA3047M
9.1	MA3091	5.1H	MA3051H
20	HZM6	5.1L	MA3051L
24	1SV221	5.1M	MA3051M
27	RD2.7M B	5.6M	MA3056M
30	RD3.0M B	6.2L	MA3062L
51	RD5.1M B2	6.2M	MA3062M
56	RD5.6M B	6.8H	MA3068H
91	RD9.1M B	6.8L	MA3068L
102	RD10M B2	6.8M	MA3068M
122	RD12M B2	6.8M	MA3068
163	RD16M B3	7.5H	MA3075H
182	RD10M B2	7.5L	MA3075L
271	RD2.7M B	8A	UN221D
272	D2.7M B2	8.2H	MA3082H
301	RD3.0M B	8.2M	MA3082M
362	D3.6M B2	9.1M	MA3091M
391	D3.9M B1	9.1M	MA3091
512	RD5.1M B2	10L	MA3100L
561	RD5.6M B	10M	MA3100M
621	RD6.2M B1	11L	MA3110L
681	RD6.8M	12M	MA3120M
683	RD6.8M B3	13H	MA3130H
911	RD9.1M B	18M	MA3180M
2.7H	MA3027H	36M	MA3360
Zener Diode			
1A	MA110	M3A	MA199
A3	1S2835	MC	MA153
A4	HSM2836C	MC	MA143
A5	1S2837	MH	MA141K
A6	HSM2838C	MH	MA151K

CODE	PART NAME	CODE	PART NAME
	Zener Diode		
B	SB0505CP	MH	MA152K
B64	SFPB64	MI	MA132K
B74	SFPB74	MN	MA141WA
BE	1SV172	MN	MA152WK
C1	HSM88S	MN	MA151WA
C2	HSM276S	MO	MA132WA
C3	1SS226	MO	MA152WA
C4	HSM88WK	MP	MA133
F7	KV1470	MT	MA151WK
H5	HVM14	MT	MA141WK
J	SB07-03C	MU	MA132WK
K	DA221	MU	MA151WA
M1A	MA159	N	DAN222
M1C	MA158	N	DAN202T
M1M	MA721	NU	MA152WK
M1N	MA713DAT	P	DAP202T
M1P	MA714	S4	D1FS4
M2A	MA122	SA	SB10-05P
M2B	MA123	Z	DA106K

3. Leadless Resistor

The resistor value is indicated on its surface, using three numerals, or one letter and one numeral.

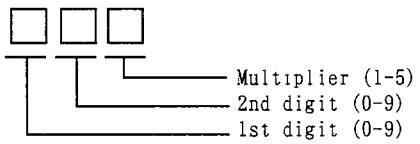
(1) Identification with three numerals

Read this code following the same procedure as when reading the color code on discrete resistors.

Example :

code	value
330	33 x 10^0 = 33 ohms
561	56 x 10^1 = 560 ohms
123	12 x 10^3 = 12K ohms
1R2	1 + 0.2 = 1.2 ohms

(R : Decimal point)



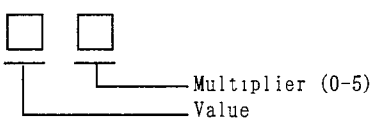
(2) Identification with one letter and one numeral

Use this code and the following chart for resisitor identification.

Letter	Value	Letter	Value	Letter	Value
A	1	J	2.2	S	4.7
C	1.2	L	2.7	U	5.6
E	1.5	N	3.3	W	6.8
G	1.8	Q	3.9	Y	8.2

Example :

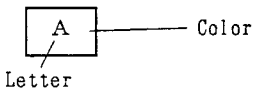
code	value
A1	1 x 10^1 = 10 ohms
G2	1.8 x 10^2 = 180 ohms
L3	2.7 x 10^3 = 2700 ohms
S4	4.7 x 10^4 = 47K ohms
W5	6.8 x 10^5 = 680K ohms



4. Leadless Capacitors

The capacitor value is indicated on its surface, using body color and one letter, or one letter and one numeral.

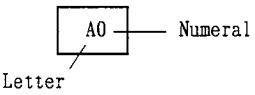
(1) Identification with body color and one letter



Body Color	Letter	Value	Body Color	Letter	Value
Red	A	1(PF)	Blue	A	100(PF)
	C	2		C	120
	E	3		E	150
	G	4		G	180
	J	5		J	220
	L	6		L	270
	N	7		N	330
	Q	8		Q	390
	S	9		S	470
Black	A	10(PF)		U	560
	C	12		W	680
	E	15		Y	820
	G	18	White	A	0.001(μF)
	J	22		E	0.0015
	L	27		J	0.0022
	N	33		L	0.0027
	Q	39		N	0.0033
	S	47		S	0.0047
	U	56		W	0.0068
	W	68	Green	A	0.01(μF)
	Y	82		E	0.015
				J	0.022
				N	0.033
				S	0.047
				U	0.056
				W	0.068
				Y	0.082
			Yellow	A	0.1(μF)

Example : Color	Letter	Value
Red	A	1PF
Black	A	10PF

(2) Identification with one letter and one numeral

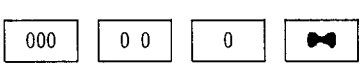


Letter/Numeral	Value	Letter/Numeral	Value
A0	1(PF)	A2	100(PF)
H0	2	C2	120
M0	3	E2	150
d0	4	G2	180
f0	5	J2	220
m0	6	L2	270
n0	7	N2	330
t0	8	Q2	390
y0	9	S2	470
A1	10(PF)	U2	560
C1	12	W2	680
E1	15	Y2	820
G1	18	A3	0.001(μF)
J1	22	E3	0.0015
L1	27	J3	0.0022
N1	33	N3	0.0033
Q1	39	S3	0.0047
S1	47	W3	0.0068
U1	56	A4	0.01(μF)
W1	68	E4	0.015
Y1	82	J4	0.022
		N4	0.033
		S4	0.047
		U4	0.056
		W4	0.068
		A5	0.1

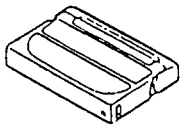
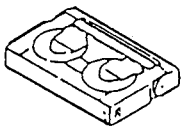
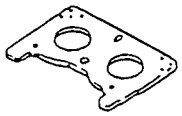
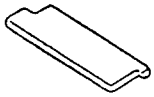
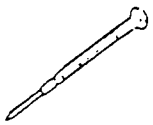
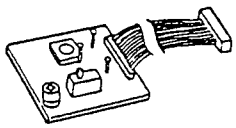
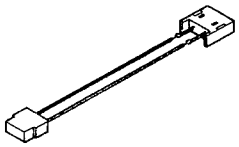
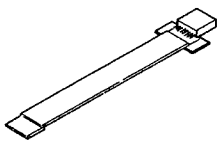
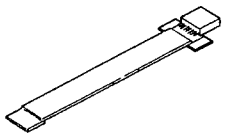
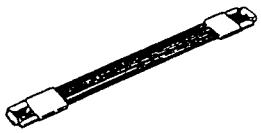
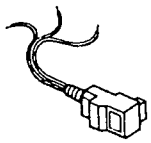
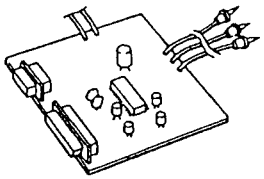
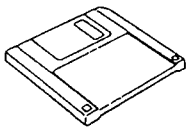
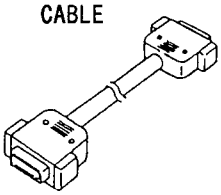
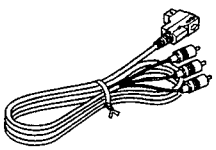
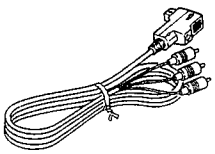
Example : Letter/Numeral	Value
A0	1PF
A1	10PF

5. Leadless Jumper

The leadless jumper is indicated as shown below.



JIGS AND TAPES FOR ADJUSTMENT

1. ALIGNMENT TAPE COLOUR BAR/400Hz (20HSC-3) No.7099232 	2. CASSETTE TORQUE METER SRK-8T-232 No.7099236 SRK-8T-212 No.7099402 	3. MASTER PLANE No.7099237 	4. REEL DISK HEIGHT JIG No.7099238 
5. SPECIAL DRIVER No.7099239 	6. ATF-R JIG (SW3:ON) No.7099461 	7. C12 LIGHT BALANCE FILTER 46mmϕ No.7099369 	8. 2-PIN EXTENSION CABLE No.7099283
※9. 2-PIN EXTENSION CABLE No.7069038 	※10. 10-PIN EXTENSION CABLE No. 7069039 	※11. 9-PIN EXTENSION CABLE No.7069040 	※12. 17-PIN EXTENSION CABLE No.7069033 
13. DSP AV OUTPUT JIG No.7099456 	14. DSP-R JIG No.7099448 	※15. ADJUSTMENT FLOPPY DISK No.7069041 	★16. PERSONAL COMPUTER
★17. PERSONAL COMPUTER 9-PIN or 25-PIN CABLE 	◎18. AV OUTPUT CABLE 	19. AV INPUT CABLE No. 5860771 	

MARKS
※ : New jigs and tools
★ : Goods on the Market
◆ : Optional Accessory
◎ : Accessory

Note 1: Always set SW3 on the ATF-R jig to ON.
Note 2: The ATF jig (No.7099386) can also be used in place of ATF-R jig to adjust this model.
Note 3: The DSP jig (No.7099442) can also be used in place of DSP-R jig to adjust this model.
Note 4: The illustration shows a stereo AV output cable, but a monaural output cable is provided with this unit. The adjustments can also be performed with a monaural output cable.

HOW TO USE THE EXTENSION CABLE

No.	NAME OF EXTENSION CABLE	PARTS No.	HOW TO USE (PURPOSE OF USE)
8	2-PIN EXTENSION CABLE	7099283	• For power supply. (Red: Negative, Brown: Positive) • Power supply cable after the case removed.
9	2-PIN EXTENSION CABLE	7069038	• Installed between the main circuit board and loading motor.
10	10-PIN EXTENSION CABLE	7069039	• Installed between the main circuit board and cylinder. Note: Using this extension cable causes noise to occur in the playback picture. This cable is used to check voltage and waveforms. Check the picture quality in the regular connection state.
11	9-PIN EXTENSION CABLE	7069040	• Installed between the main circuit board and capstan motor.
12	17-PIN EXTENSION CABLE	7069033	• Installed between the sensor and main circuit boards.

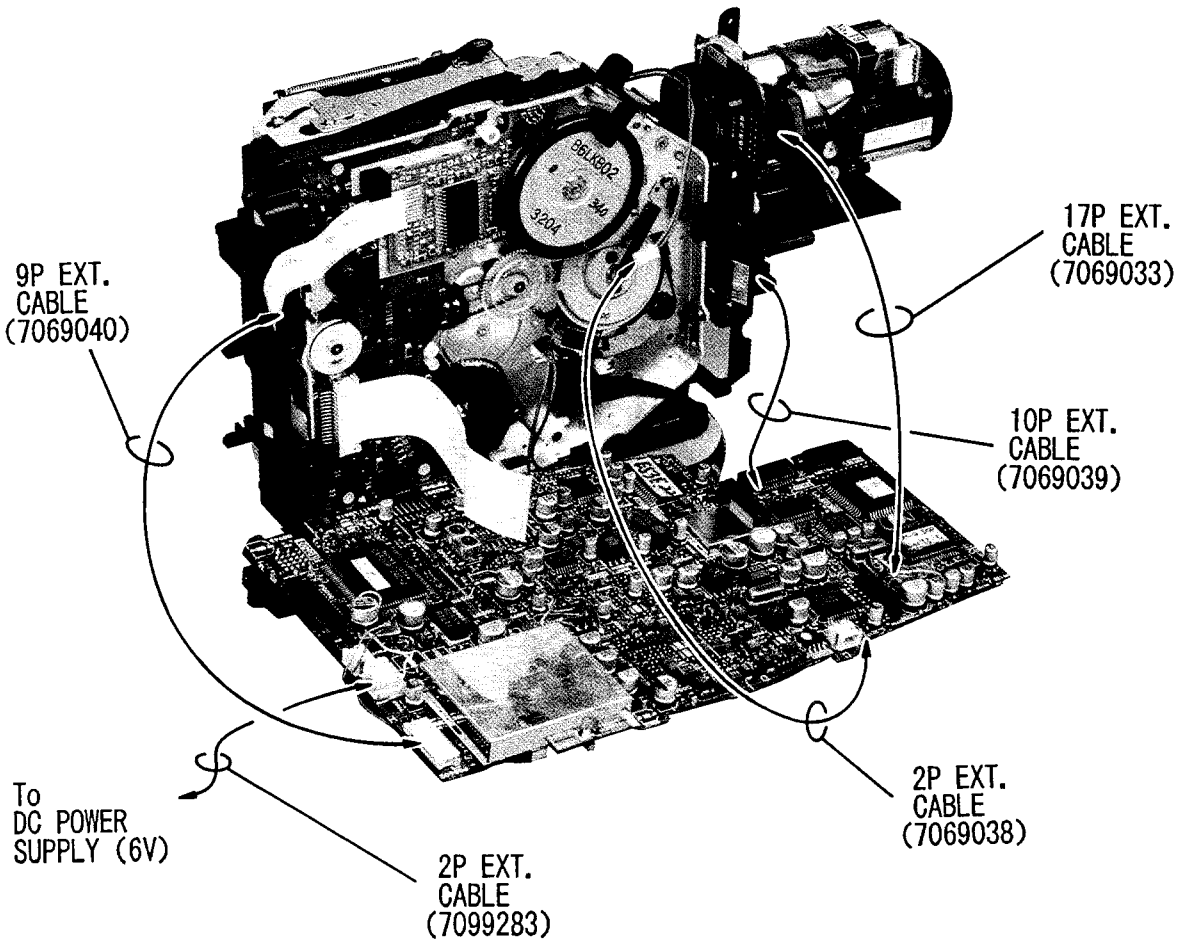


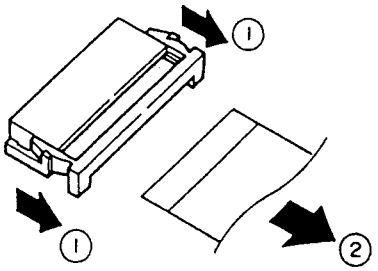
Fig. 1-1

DISASSEMBLY

CAUTION

1. When dismantling the lens block, never remove components other than the zoom motor, iris block, focus motor and flat cable of the lens.
2. Set the camera/recorder to the eject state before dismantling it. If the camera/recorder will not enter the eject state due to a defect, refer to "2. DISASSEMBLY METHOD WHEN TROUBLE OCCURS".
3. Disconnect flat cables from connectors by the procedure shown in Fig. A. Since many circuit boards in the camera/recorder are connected by in-board connectors, be sure to follow DISASSEMBLY when removing the circuit boards.

HOW TO DISCONNECT A FLAT CABLE



① Release the lock of the connector on the left and right simultaneously.

② Pull out the flat cable.

Fig. A

1. IDENTIFICATIONS OF MAJOR COMPONENTS

Numbers in ( ) show the numbers of Figs. that describe how to remove the components.

1.1 Major Components and Circuit Boards

1.1.1 Main Block Section

1.	Cassette Lid	(3-1)
2.	Left Case	(3-4)
3.	Top Cover	(3-1)
4.	Microphone (MIC)	(3-4)
5.	Camera Block	(3-4)
6.	Rubber Ring	(3-1)
7.	Lens Hood Holder	(3-1)
8.	Lens Hood	(---)
9.	Right Case Assembly	(3-1)
10.	Main Circuit Board	(3-5)
11.	VTR Frame	(3-5)
12.	Tape Transport Mechanism	(3-5)

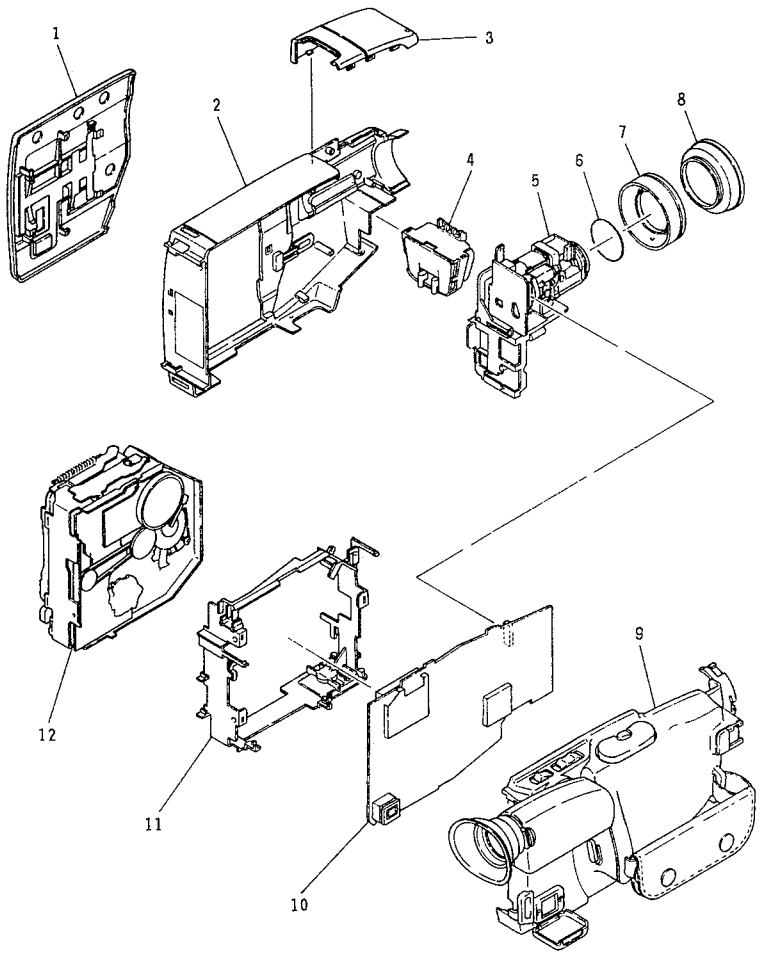


Fig. 1-1

1.1.2 Right Case Section

1.	REC SW/Batt. Circuit Board	(3-3)
2.	T/W SW Unit	(3-3)
3.	Right Case	(3-3)
4.	DC Light Terminal	(3-3)
5.	Hand Starp	(3-3)
6.	AV Jack Cover	(3-3)
7.	Electronic Viewfinder (EVF) Block	(3-3)

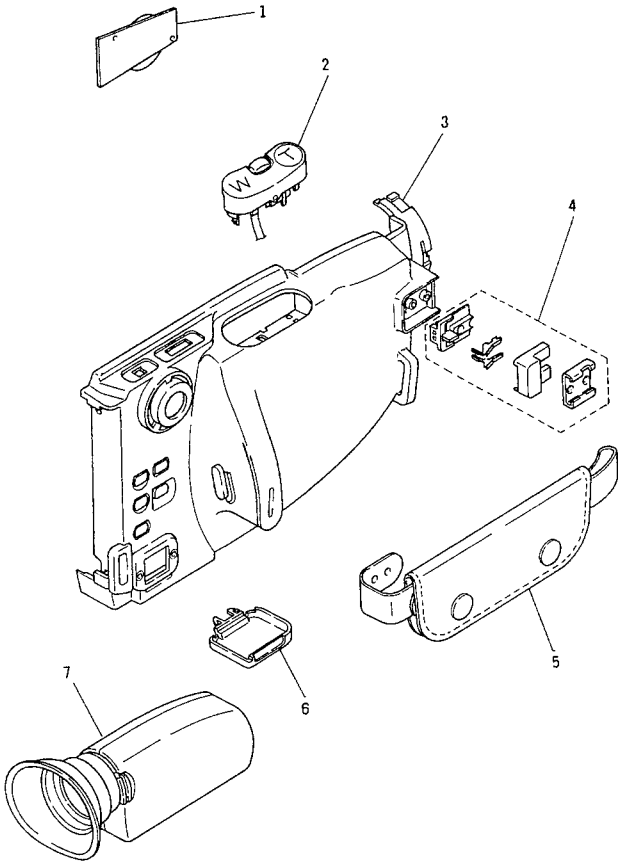


Fig. 1-2

1.1.3 Camera Block Section

1.	Sensor Circuit Board	(3-6)
2.	Sensor Plate	(3-6)
3.	CCD Image Sensor	(3-6)
4.	Sensor Guide	(3-6)
5.	Sensor Rubber	(3-6)
6.	Crystal Filter	(3-6)
7.	Sensor Cover	(3-6)
8.	Lens Block	(3-6)
9.	Camera Frame	(3-3)

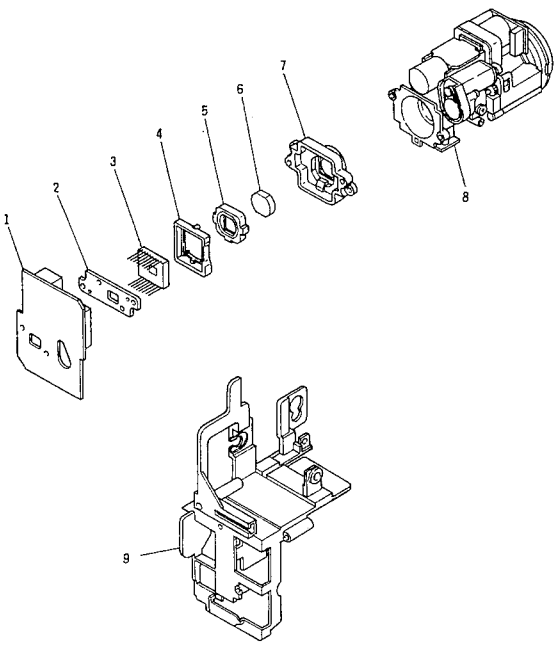


Fig. 1-3

1.1.4 Electronic Viewfinde (EVF) Section

1.	EVF Left Case	(3-7)
2.	CRT Top Cover	(3-7)
3.	CRT	(3-7)
4.	Electronic Viewfinder (EVF) Circuit Board	(3-7)
5.	CRT Bottom Cover	(3-7)
6.	EVF Right Case	(3-7)
7.	Clear Cover	(3-7)
8.	EVF Lens	(3-7)
9.	Eye Cup	(3-7)

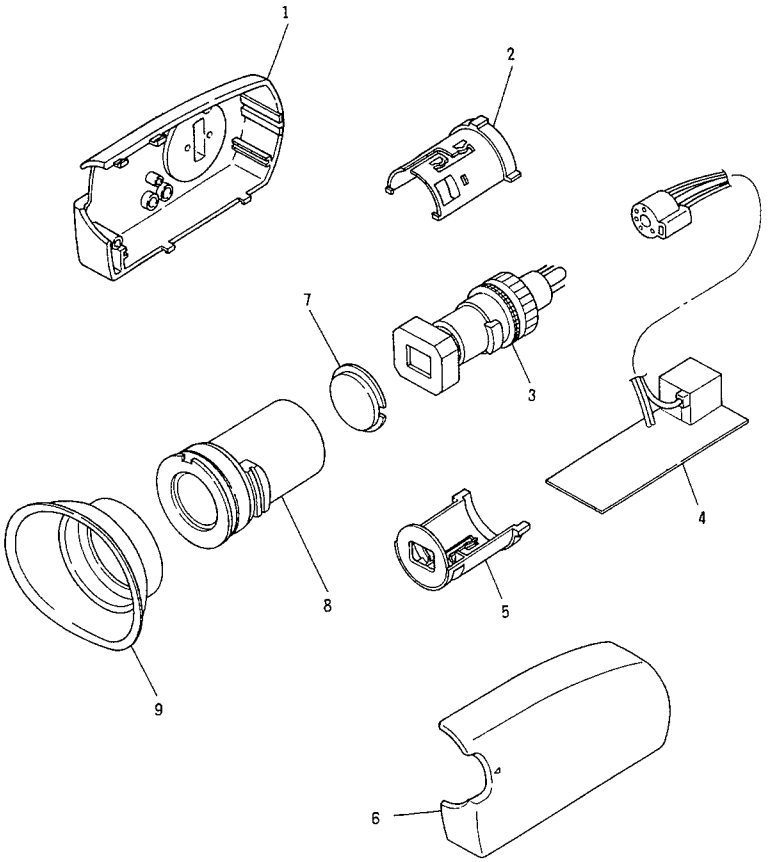


Fig. 1-4

1.1.5 Lens Section

1.	Iris Block	(3-8)
2.	Focus Motor	(3-8)
3.	Lens	(3-8)
4.	Zoom Motor	(3-8)
5.	Position Sensor	(3-8)
6.	Lens Flat Cable	(3-8)

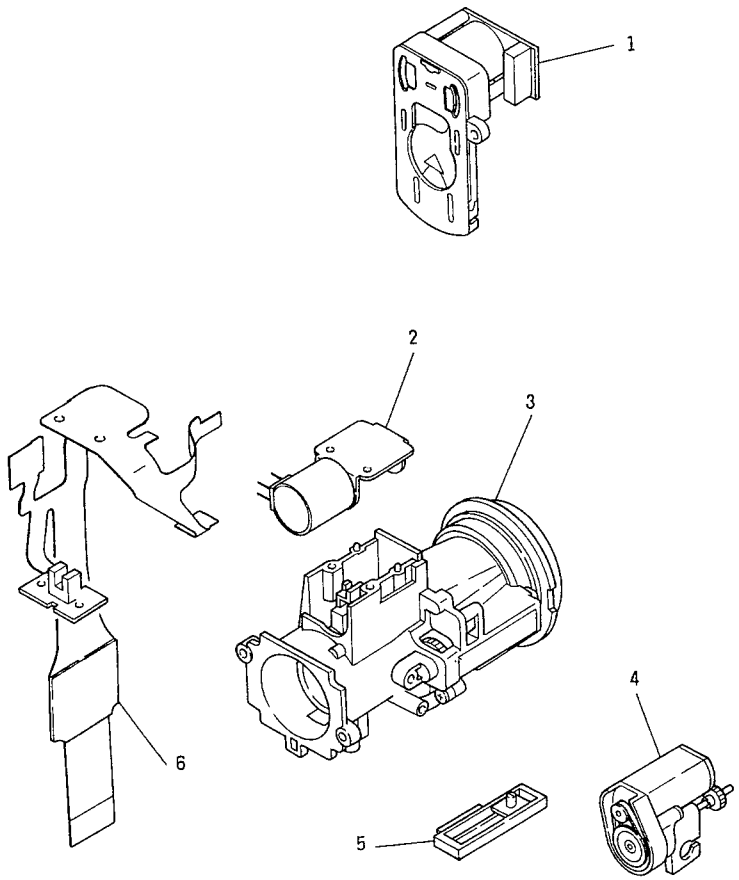


Fig. 1-5

1.2 Major Tape Transport Mechanism Components

1.2.1 Top View

1.	Cylinder	(4-2)
2.	Capstan Motor	(4-1, 2)
3.	Loading Motor	(4-2)
4.	Pull-out Pole	(4-3, 4)
5.	Loading Gear (1)	(4-2)
6.	Loading Gear (2)	(4-2)
7.	Pressure Roller Cam Gear	(4-3, 4)
8.	Pressure Roller	(4-4)
9.	Loading Relay Gear (1)	(4-7)
10.	Take-up Reel Brake	(4-4)
11.	Eject Lock Drive Arm	(4-6)
12.	Take-up Reel Disk	(4-5)
13.	Reel Drive Idler	(4-6)
14.	Take-up Guide Roller	(4-5)
15.	Loading Relay Gear (3)	(4-7)
16.	Supply Reel Disk	(4-6)
17.	Supply Reel Brake	(4-6)
18.	Tension Band Holder (Tension Band)	(4-6)
19.	Eject Arm	(4-6)
20.	Tension Spring	(4-6)
21.	Tension Arm	(4-6)
22.	Supply Guide Roller	(4-5)
23.	Impedance Roller	(4-5)
24.	Dew Sensor	(4-4)

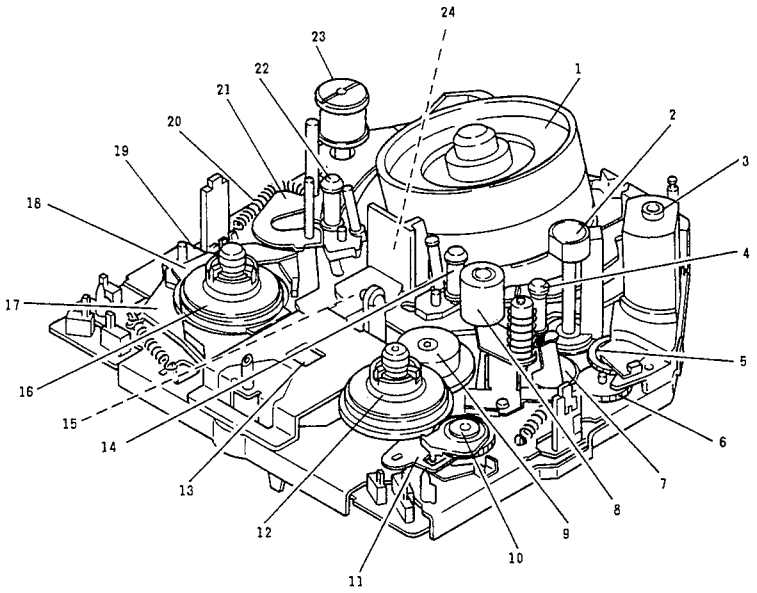


Fig. 1-6

1.2.2 Bottom View

1.	Capstan Motor	(4-1, 2)
2.	Pulley Gear	(4-4)
3.	Static Discharge Brush	(4-2)
4.	Trouble Sensor Circuit Board	(4-4)
	• End LED	
	• Supply and Take-up End Sensors	
	• Supply and Take-up Reel Sensors	
	• Safety Tab Switch	
	• Tape Select Switch	
	• Cassette Holder Switch	
	• Mechanism State Switch	
5.	Capstan Belt	(4-4)
6.	Centre Gear	(4-4)

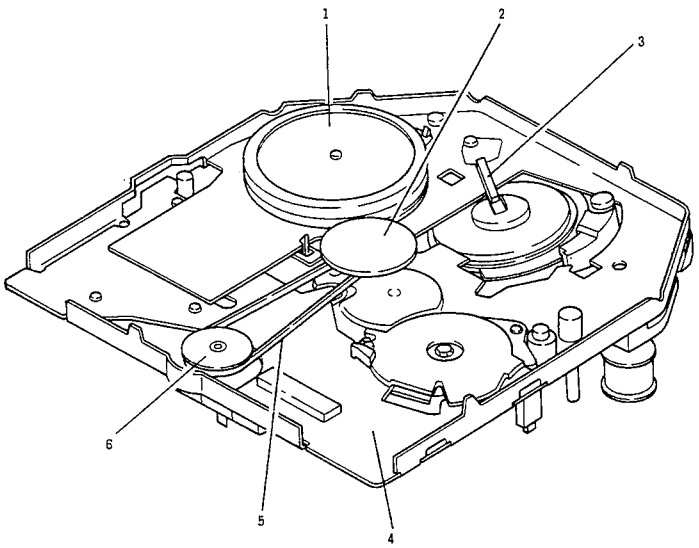


Fig. 1-7

2. HOW TO SET TO THE EJECT STATE MANUALLY

Note: This is not necessary for camera/recorders which are set to the eject state normally.

1) Lift the cassette lid in the direction of arrow (A) and insert tweezers between the cassette lid and left case. (Fig. 2-1)
2) Release two (2) tabs (C) of the plate spring in the cassette lid in the direction of arrows (B) and remove the cassette lid in the direction of arrow (D).

Note: If the electrical circuit is defective, connect a power supply directly to the loading motor that can be seen through hole (E) in the left case; the camera/recorder can be set to the eject state. (Fig. 2-2) Be careful of the following when supplying power.

① Set the power supply to 3-5 V DC. (Do not apply more than 5V as this could result in a secondary defect.)
② Connect the red wire to the positive terminal and the brown wire to the negative terminal to activate unloading. Connect the brown wire to the positive terminal and the red wire to the negative terminal to activate loading.

3) Remove the following parts in advance, referring to subsequent items.

- Lens hood holder (Fig. 3-2)
- Top cover (Fig. 3-2)
- Open the right case (Fig. 3-2)
- Main block (Fig. 3-4)
- Main circuit board (Fig. 3-5)
- VTR frame and tape transport mechanism (Fig. 3-5)
- Loading motor (Fig. 4-2)

4) Turn the Loading Gear (1) in the direction of arrow (F) to unload. (Fig. 2-3)

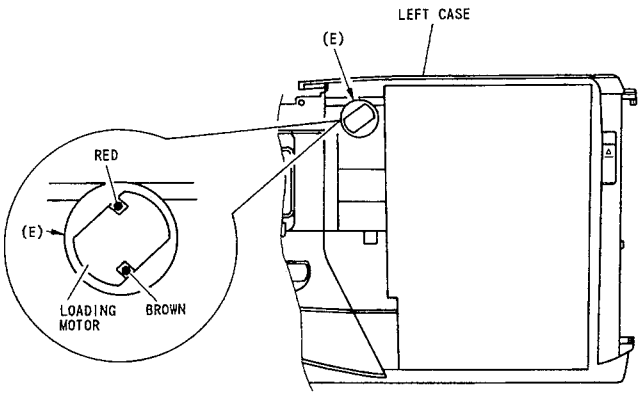


Fig. 2-2

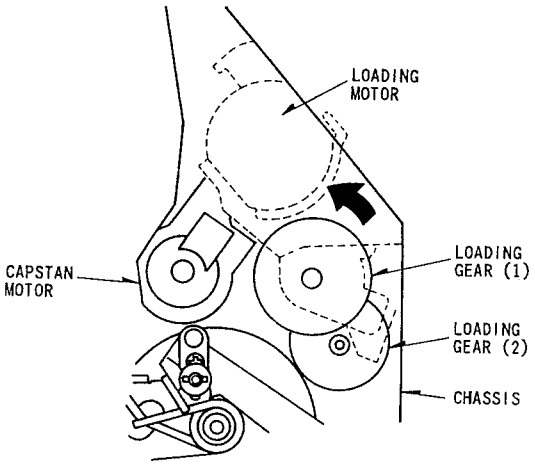
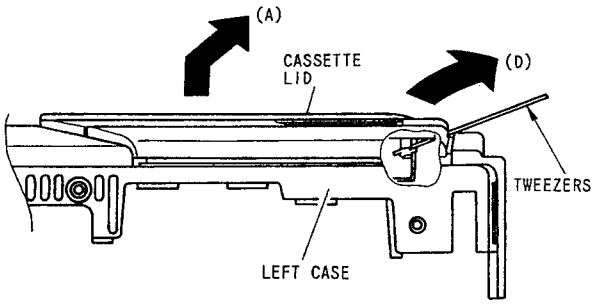


Fig. 2-3



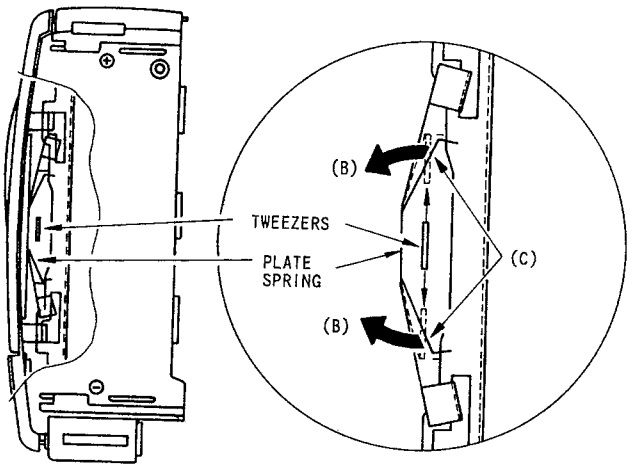


Fig. 2-1

3. NORMAL DISASSEMBLY METHOD

Perform the following to dismantle the camera/recorder if unloading is performed normally (the camera/recorder can be set to the eject state). If unloading cannot be done, refer to "2. HOW TO SET TO THE EJECT STATE MANUALLY".

3.1 CASES AND CIRCUIT BOARDS

3.1.1 Cassette Lid, Lens Hood Holder, Top Cover, and Right Case Removal

Note: Set the unit to the eject state and remove the lens cap from the lens hood.

A. Cassette Lid (Figs. 3-1, 3-2)

1) Release tabs of the plate spring on the cassette lid in the direction of the arrows. (Fig. 3-1)
2) Remove the cassette lid in the direction of the arrow. (Fig. 3-2)

B. Lens Hood Holder (Fig. 3-2)

1) Remove one (1) screw.
2) Turn the lens hood holder in the direction of the arrow.
3) Remove the lens hood holder in the direction of the arrow.

Note: The rubber ring is removed on its own when the lens hood holder is removed. Be sure to reinstall the rubber ring as show in Fig. 3-2.

C. Top Cover (Fig. 3-2)

Components to remove in advance	Fig No.
• Lens Hood Holder	3-2

1) Remove the top cover in the direction of the arrow.

D. Open the Right Case (Fig. 3-2)

Components to remove in advance	Fig No.
• Lens Hood Holder	3-2

1) Open the AV jack cover.
2) Remove six (6) screws.
3) Open the right case in the direction of the arrow.
4) Disconnect three (3) connectors and one (1) flat cable.

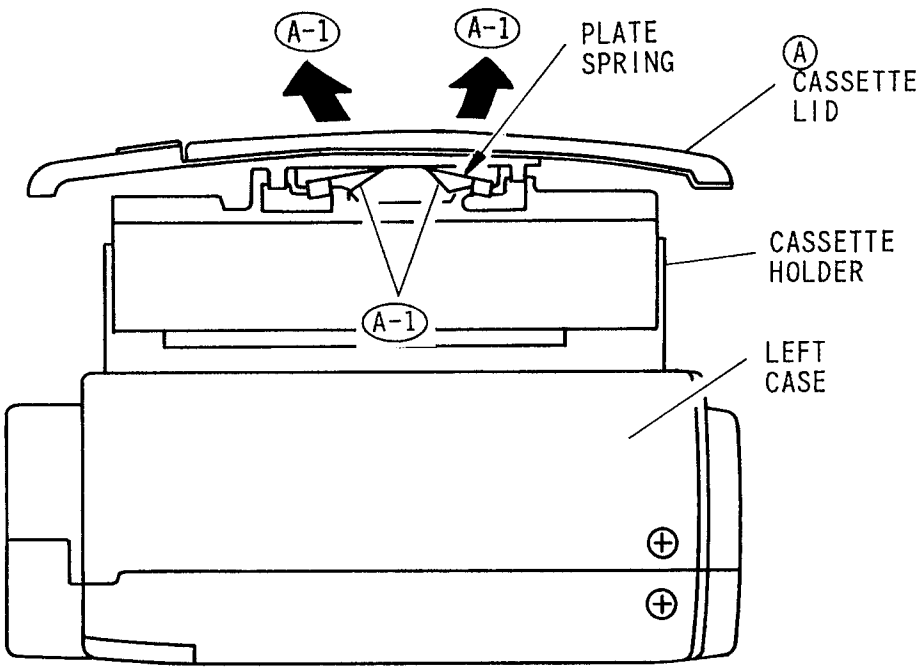


Fig. 3-1

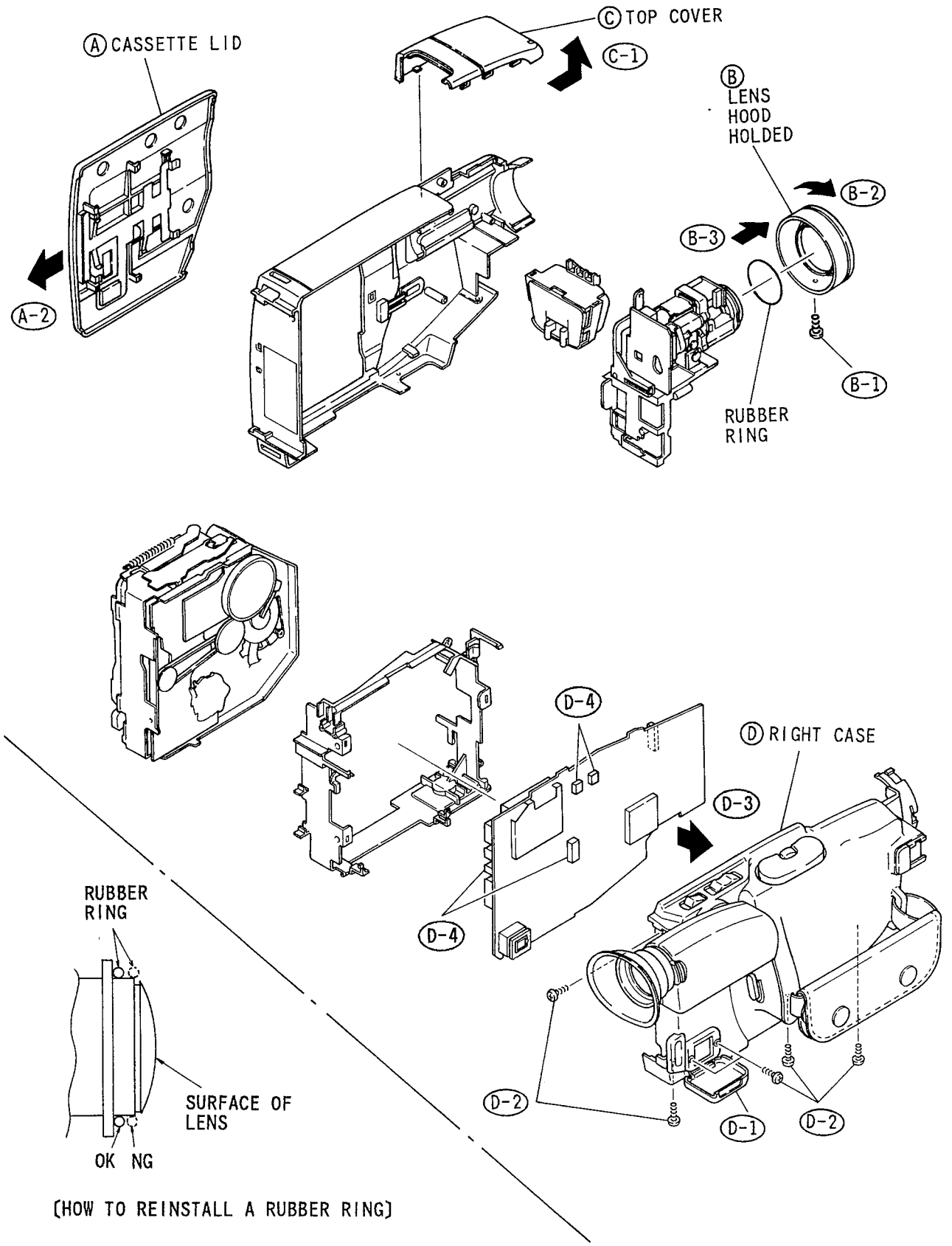

Ⓐ CASSETTE LID
A-2
Ⓒ TOP COVER
C-1
Ⓑ LENS HOOD HOLDED
B-2
B-3
B-1
RUBBER RING
D-4
Ⓓ RIGHT CASE
D-3
D-4
D-2
D-1
D-2
RUBBER RING
SURFACE OF LENS
OK NG
(HOW TO REINSTALL A RUBBER RING)

Fig. 3-2

3.1.2 Electronic Viewfinder (EVF) Block, REC SW/Batt. Circuit Board, T/W SW Unit, Accessory Shoe and DC Light Terminal, Hand Strap, AV Jack Cover and Right Case Removal

Components to remove in advance	Fig No.
• Lens Hood Holder	3-2
• Top Cover	3-2
• Open the right case	3-2

A. Electronic Viewfinder (EVF) Block (Fig. 3-3)

1) Remove two (2) screws.
2) Remove the EVF in the direction of the arrow.

Note: The EVF plate and plate spring are removed on their own when the EVF is removed.

B. REC SW/Batt. Removal (Fig. 3-3)

1) Remove two (2) screws.
2) Remove the REC SW/Batt. circuit board in the direction of the arrow.

Note: The lithium battery on the REC SW/Batt. circuit board can be recharged. It cannot be removed from the board.

C. T/W SW Unit (Fig. 3-3)

1) Release five (5) tabs.
2) Remove the T/W SW unit in the direction of the arrow.

D. Accessory Shoe and DC Light Terminal (Fig. 3-3)

1) Remove two (2) screws.
2) Remove the accessory shoe and DC light terminal in the direction of the arrow.

E. Hand Strap (Fig. 3-3)

Components to remove in advance	Fig No.
• REC SW/Batt. circuit Board	3-3

1) Remove two (2) screws.
2) Remove the hand strap from the strap holder on the right case.

F. AV Jack Cover and Right Case (Fig. 3-3)

Components to remove in advance	Fig No.
• EVF Block	3-3
• REC SW/Batt. Circuit Board	3-3
• T/W SW Unit	3-3
• Accsseory Shoe and DC Light Terminal	3-3

Note: Remove the EVF block, T/W SW unit, accessory shoe and DC light terminal only when removing the right case.

1) Remove the AV jack cover in the direction of the arrow.

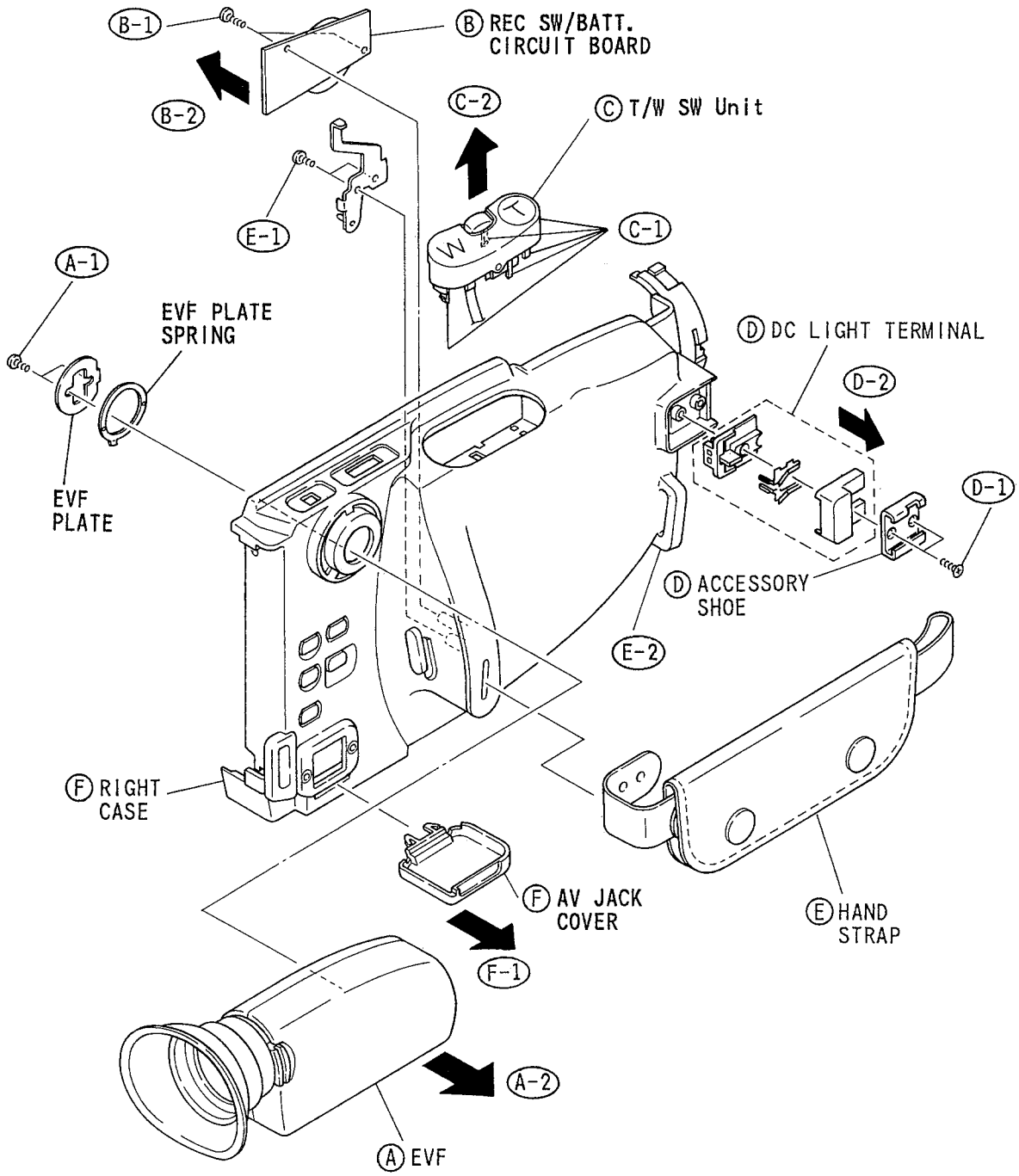

B-1
Ⓑ REC SW/BATT.
CIRCUIT BOARD
B-2
C-2
Ⓒ T/W SW Unit
E-1
C-1
A-1
EVF PLATE
SPRING
Ⓓ DC LIGHT TERMINAL
D-2
D-1
EVF
PLATE
Ⓓ ACCESSORY
SHOE
E-2
Ⓕ RIGHT
CASE
Ⓕ AV JACK
COVER
Ⓔ HAND
STRAP
F-1
A-2
Ⓐ EVF

Fig. 3-3

3.1.3 Main Block (Main Circuit Board, VTR Frame, Tape Transpoart Mechanism), Camera Block, Microphone (MIC) and Left Case Removal

Components to remove in advance	Fig No.
• Cassette Lid	3-1, 2
• Lens Hood Holder	3-2
• Top Cover	3-2
• Open the right case	3-2

A. Main Block (Main Circuit Board, VTR Frame, Tape Transpoart Mechanism) (Fig. 3-4)

1) Remove three (3) screws.
2) Remove one (1) screw.
3) Disconnect three (3) connectors and one (1) flat cable.
4) Remove the main block in the direction of the arrow. (The main block (main circuit board) and camera block (sensor circuit board) are connected via a board-in type connector.)

Note: Be careful as the screw plate can be removed easily from the VTR frame when the main block has been removed.

B. Camera Block (Fig. 3-4)

Components to remove in advance	Fig No.
• Main Block	3-4

1) Remove three (3) screws.
2) Remove the camera block in the direction of the arrow.

C. Microphone (MIC) and Left Case (Fig. 3-4)

Components to remove in advance	Fig No.
• Main Block	3-4

1) Remove one (1) screw.
2) Remove the MIC in the direction of the arrow.

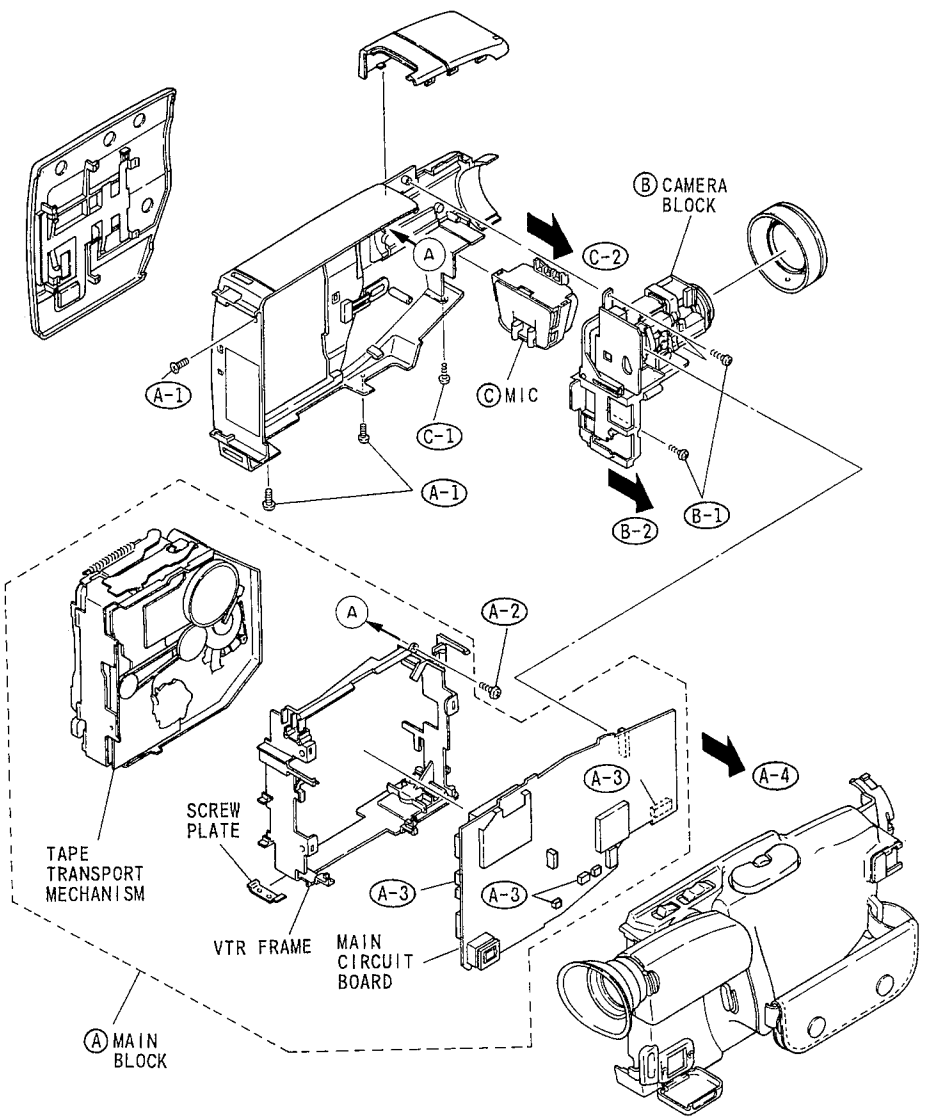


Fig. 3-4

3.1.4 Main Circuit Board, VTR Frame and Tape Transport Mechanism Removal

Components to remove in advance	Fig No.
• Cassette Lid	3-1, 2
• Lens Hood Holder	3-2
• Top Cover	3-2
• Open the right case	3-2
• Main Block	3-4

A. Main Circuit Board (Fig. 3-5)

1) Disconnect two (2) connectors and four (4) flat cables.
2) Remove one (1) screw.
3) Release four (4) tabs.

B. VTR Frame and Tape Transport Mechanism (Fig. 3-5)

Components to remove in advance	Fig No.
• Main Circuit Board	3-5

1) Remove one (1) screw.
2) Release three (3) engaged sections.
3) Remove the VTR frame in the direction of the arrow.

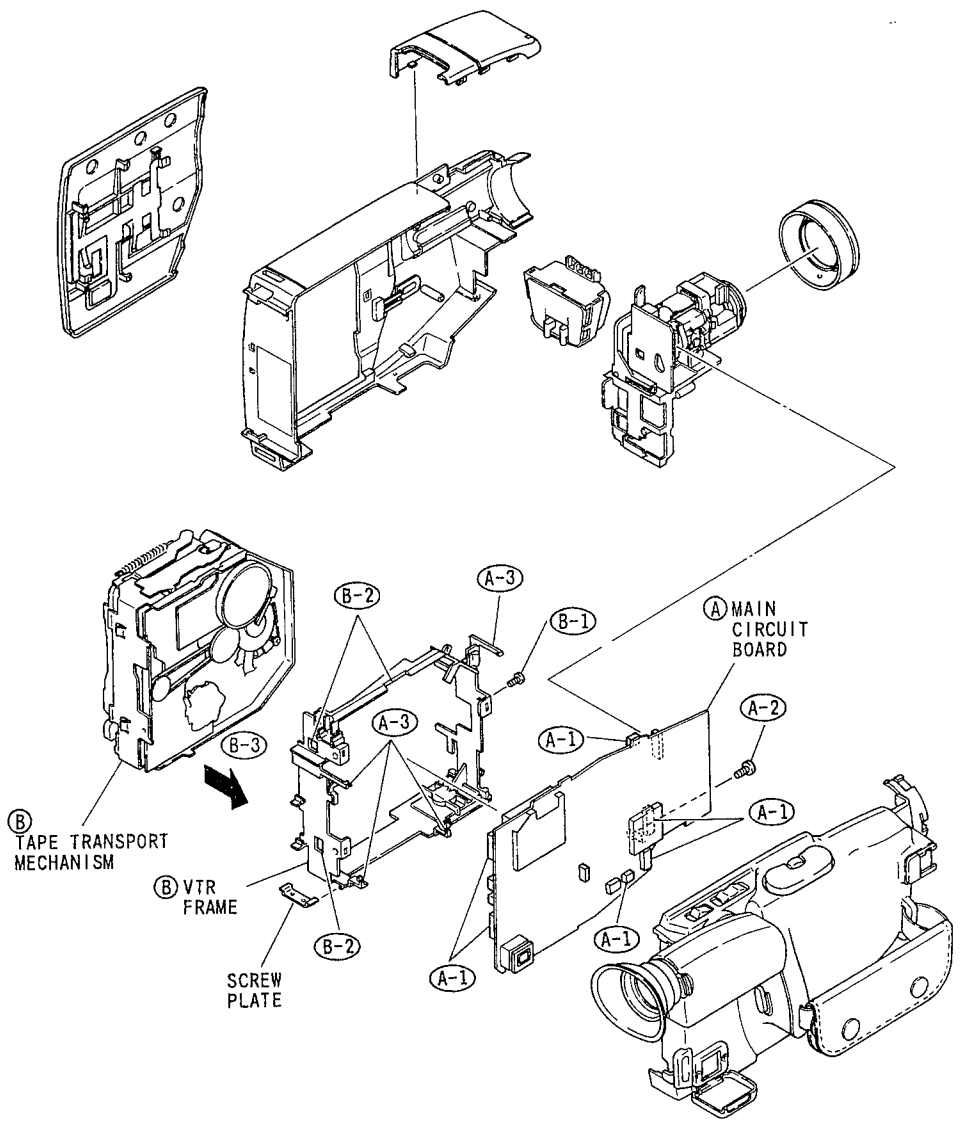


Fig. 3-5

3.1.5 Camera Frame, Lens Block and Sensor Circuit Board Removal

Components to remove in advance	Fig No.
• Cassette Lid	3-1, 2
• Lens Hood Holder	3-2
• Top Cover	3-2
• Open the right case	3-2
• Main Block	3-4
• Camera Block	3-4

A. Camera Frame (Fig. 3-6)

1) Remove three (3) screws.
2) Widen a section of the camera frame that is engaged with the lens slightly and remove the camera frame.

B. Lens Block (Fig. 3-6)

Components to remove in advance	Fig No.
• Cemera Frame	3-6

1) Remove two (2) screws.
2) Remove the lens block.

C. Sensor Circuit Board (Fig. 3-6)

Components to remove in advance	Fig No.
• Cemera Frame	3-6
• Lens Block	3-6

1) Remove two (2) screws.
2) Remove the sensor cover.

Note: When the sensor cover is removed, the crystal filter and sensor rubber are removed on their own. Be careful not to damage the crystal filter.

3) Remove the sensor guide and unsolder sixteen (16) points on the circuit board (terminals of the CCD image sensor).
4) Remove two (2) screws.

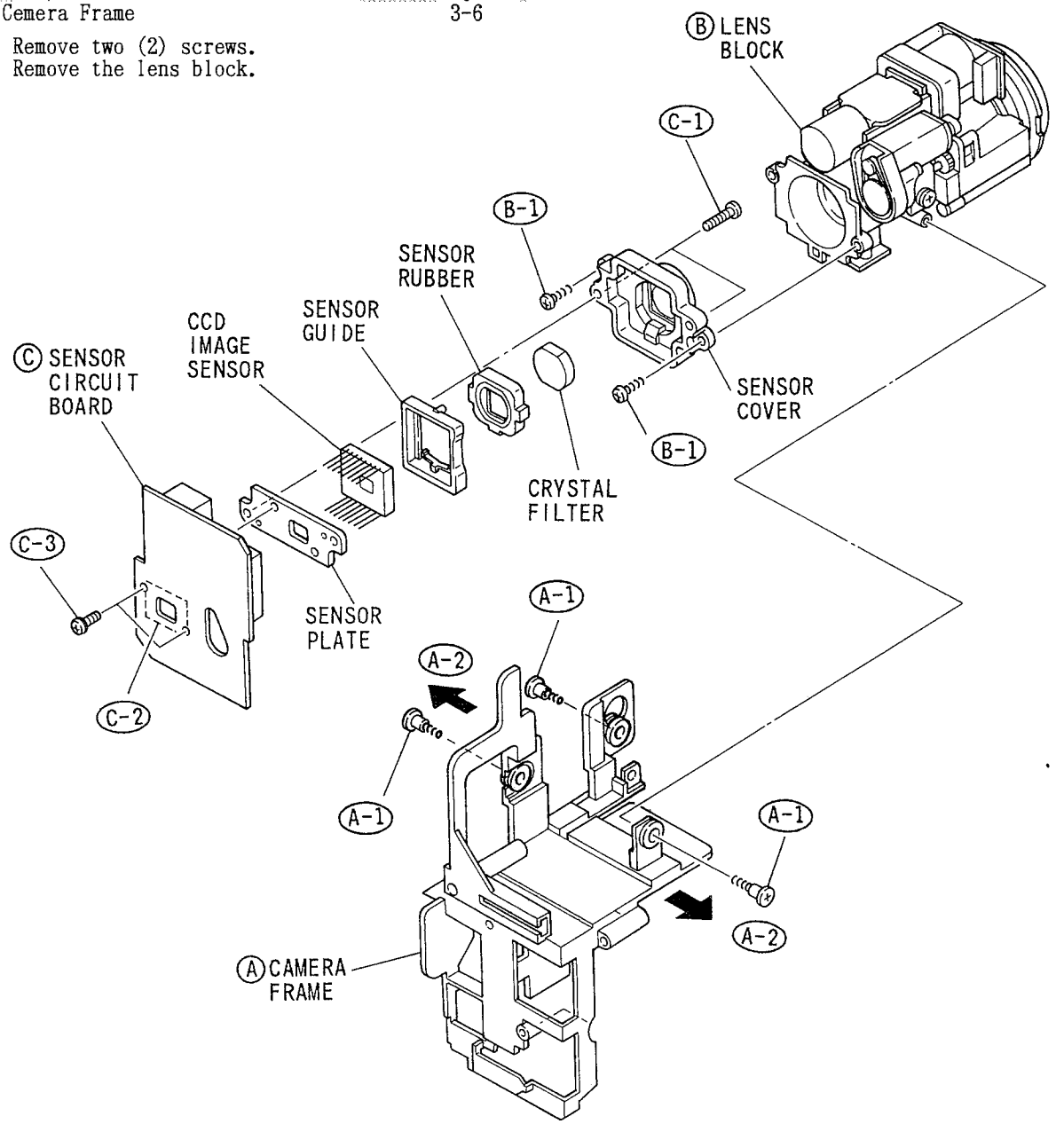


Fig. 3-6

3.2 ELECTRONIC VIEWFINDER (EVF) BLOCK

Note: Remove the EVF block in advance.

3.2.1 EVF Lens Block, EVF Left Case, EVF Right Case, EVF Circuit Board and CRT Removal

A. EVF Lens Block (Fig. 3-7)

1) Turn the EVF lens block in the direction of the arrow.
2) Remove the EVF lens block in the direction of the arrow.

B. EVF Left Case (Fig. 3-7)

1) Remove two (2) screws.
2) Remove the left case from the right case in the direction of the arrow.

C. EVF Right Case (Fig. 3-7)

Components to remove in advance	Fig No.
• EVF Left Case	3-7

1) Remove the EVF circuit board and CRT from the right case in the direction of the arrow.

D. EVF Circuit Board (Fig. 3-7)

Components to remove in advance	Fig No.
• EVF Left Case	3-7
• EVF Right Case	3-7

1. Disconnect connector and CRT socket.

E. CRT (Fig. 3-7)

Components to remove in advance	Fig No.
• EVF Left Case	3-7
• EVF Right Case	3-7
• EVF Circuit Board	3-7

1) Release two (2) tabs.

Note: When the CRT top and bottom covers are removed, the clear cover is removed on its own. Be careful not to damage the clear cover.

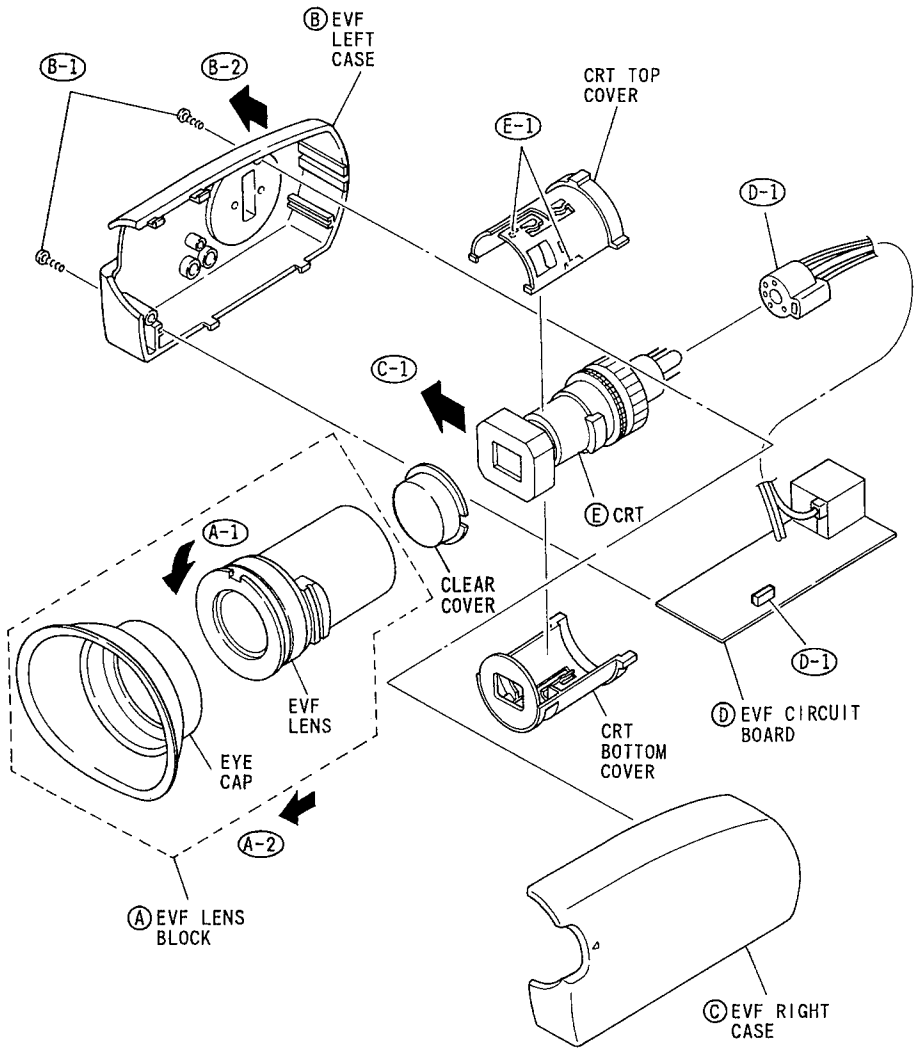


Fig. 3-7

3.3 LENS BLOCK

Note: Remove the lens block in advance.

3.3.1 Focus Motor, Zoom Motor, Iris Block, Position Sensor and Lens Flat Cable Removal

Note: Be careful not to damage the lens flat cable.

A. Focus Motor (Fig. 3-8)

1) Unsolder four (4) points.
2) Remove two (4) screws.
3) Remove the focus motor from the lens.

B. Zoom Motor (Fig. 3-8)

1) Remove one (1) screw.
2) Unsolder two (2) points.

C. Iris Block (Fig. 3-8)

1) Disconnect one (1) flat cable.
2) Remove one (1) screw.
3) Remove the iris block in the direction of the arrow.

Note: Be careful not to damage the iris blades. Also take care that foreign matter such as dust, etc. does not adhere to the iris blades.

D. Position Sensor (Fig. 3-8)

1) Remove one (1) screw.
2) Unsolder two (2) points.

E. Lens Flat Cable (Fig. 3-8)

Components to remove in advance	Fig No.
• Focus Motor	3-8
• Zoom Motor	3-8
• Position Sensor	3-8

1) Disconnect one (1) flat cable.

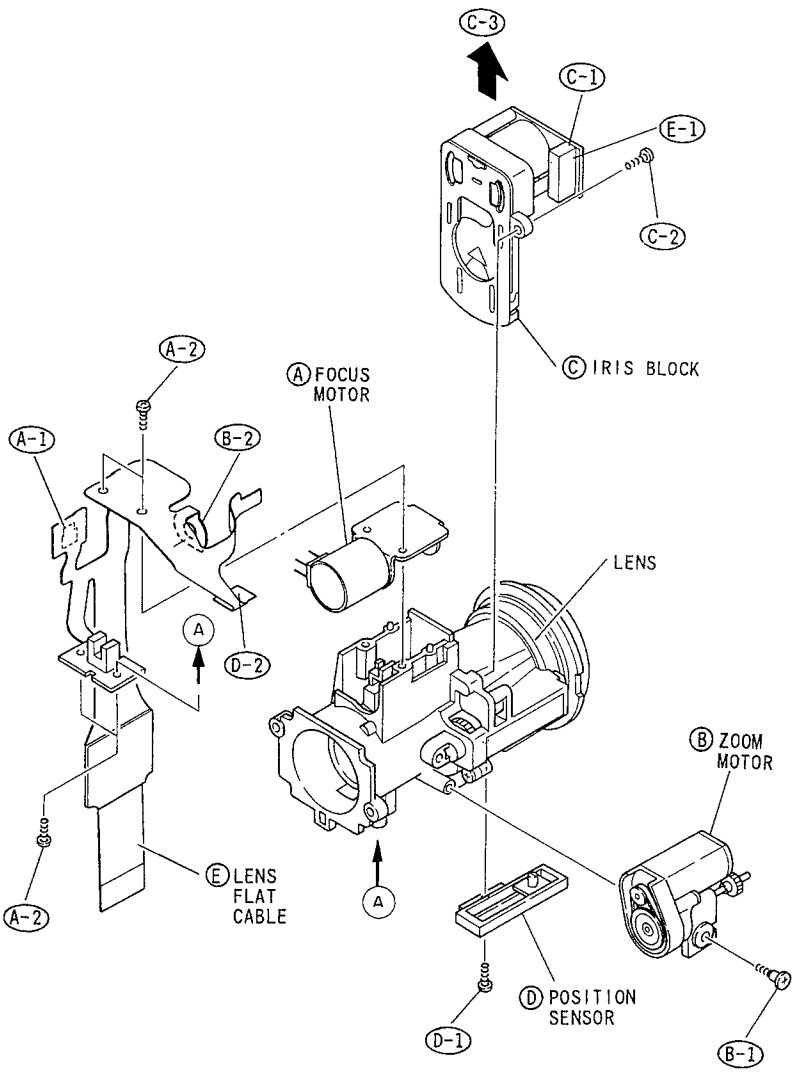


Fig. 3-8

4. TAPE TRANSPORT MECHANISM DISASSEMBLY

Note 1: Remove the tape transport mechanism in advance.
Note 2: Dismantle and reinstall the tape transport mechanism in the unloading/stop mode.

4.1 Cassette Holder, Motors, Sensors and Circuit Boards

4.1.1 Cassette Holder, Static Discharge Brush, Cylinder, Loading Motor, Loading Gears (1) and (2), Capstan Motor and Tape Cover Removal

A. Cassette Holder (Fig. 4-2)

1) Move the eject lever in the direction of the arrow and set the unit to the eject state.
2) Remove four (4) screws.

Note: Reinstall the cassette holder so that section (b) of the eject lock slider is inserted into section (a) of the eject lock arm.

B. Static Discharge Brush (Fig. 4-2)

1) Remove one (1) screw.

C. Cylinder (Fig. 4-2)

1) Remove two (2) screws.
2) Remove the cylinder in the direction of the arrow.

Note 1: Take care as the spring can be removed on its own when screw (c) holding the cylinder is removed.
Note 2: Do not touch video head tips with your fingers or tools, etc. during work.
Note 3: After reinstalling the cylinder, be sure to perform the following adjustment.
・5. ADJUSTMENTS AFTER REPLACING THE CYLINDER in CHAPTER 3

D. Loading Motor, Loading Gears (1) and (2) (Fig. 4-2)

Note: Although the loading motor can be removed with the cassette holder attached, it is better to remove the holder to make the work easier.

1) Remove two (2) screws.
2) Remove the loading motor and loading gears (1) and (2) in the direction of the arrow.

Note: Perform the following adjustments after reinstalling the loading motor and loading gears (1) and (2).
・3. PHASE MATCHING ASSEMBLY in CHAPTER 3

E. Capstan Motor (Figs. 4-1, 4-2)

Components to remove in advance	Fig No.
• Loading Motor and Loading Gears (1) and (2)	4-2

1) Remove three (3) screws. (See Fig. 4-2)
2) Release three (3) tabs. (See Fig. 4-1)
3) Remove the capstan motor in the direction of the arrow.

F. Tape Cover (Fig. 4-2)

1) Release two (2) tabs.

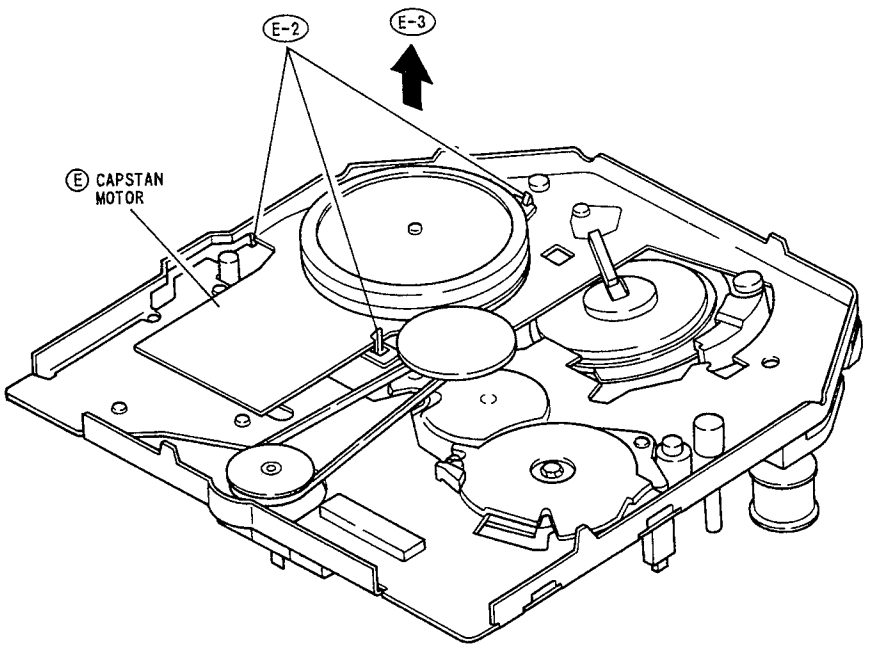


Fig. 4-1

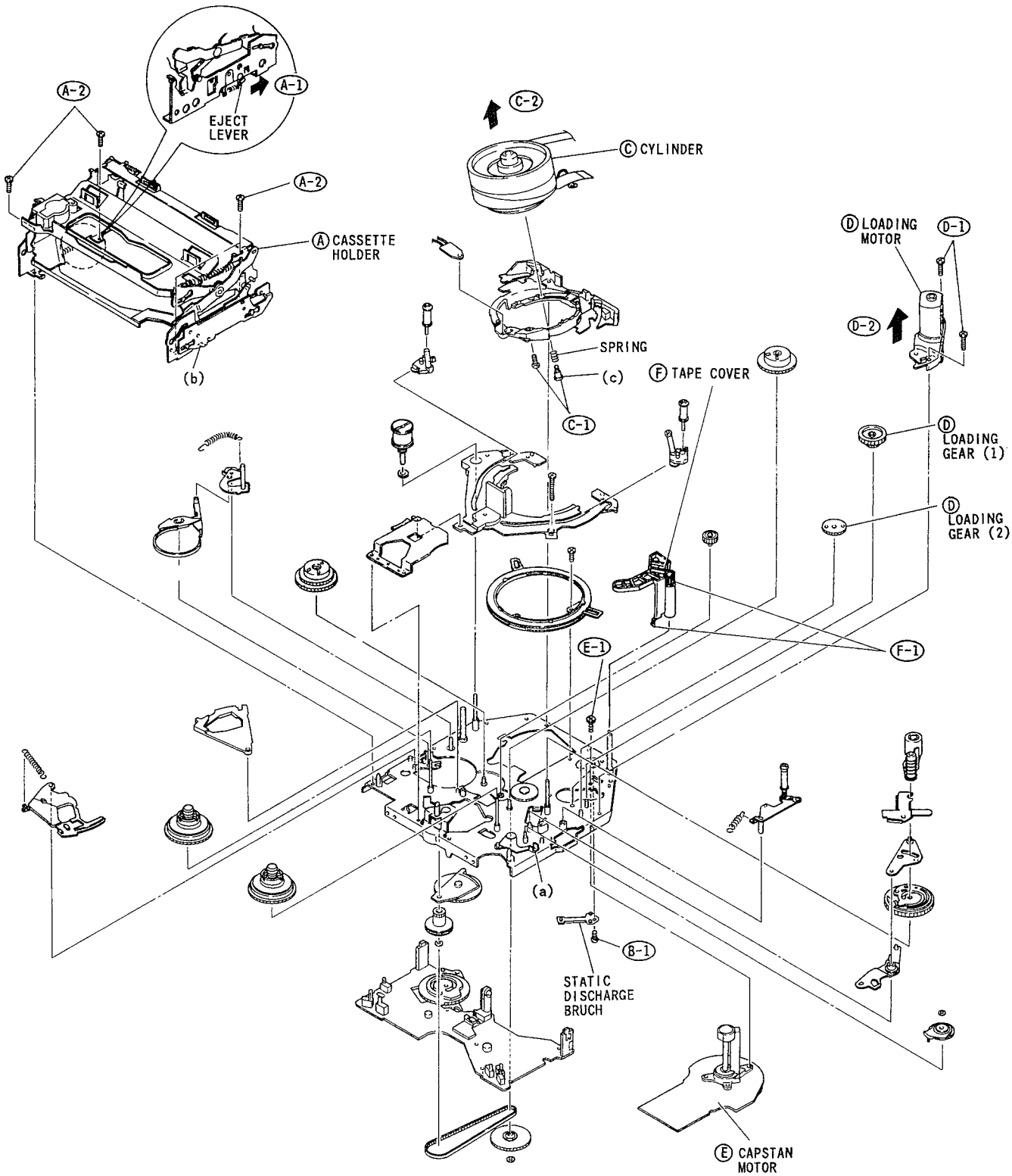

A-2
A-1
EJECT LEVER
A-2
Ⓐ CASSETTE HOLDER
(b)
C-2
Ⓒ CYLINDER
SPRING
(c)
C-1
Ⓓ LOADING MOTOR
D-1
D-2
Ⓓ LOADING GEAR (1)
Ⓓ LOADING GEAR (2)
Ⓕ TAPE COVER
E-1
F-1
(a)
B-1
STATIC DISCHARGE BRUCH
Ⓔ CAPSTAN MOTOR

Fig. 4-2

4.1.2 Pulley Gear, Centre Gear, Capstan Belt, Trouble Sensor Circuit Board, Dew Sensor, Pressure Roller, Pull-Out Pole, Pressure Roller Drive Arm, Pressure Roller Cam Gear and Take-up Reel Brake Removal

A. Pulley Gear, Centre Gear and Capstan Belt (Fig. 4-4)

Components to remove in advance	Fig No.
• Loading Motor and Loading Gears (1) and (2)	4-2
• Capstan Motor	4-1,2

1) Remove one (1) washer.
2) Remove one (1) washer.
3) Remove the centre gear and pulley gear together with the capstan belt.

B. Trouble Sensor Circuit Board (Fig. 4-4)

Components to remove in advance	Fig No.
• Loading Motor and Loading Gears (1) and (2)	4-2
• Capstan Motor	4-1,2
• Pulley Gear, Centre Gear and Capstan Belt	4-4

Note: The following sensors and switches are installed on the trouble sensor circuit board.
- End LED
- Supply and Take-up End Sensors
- Supply and Take-up Reel Sensors
- Safety Tab Switch
- Tape Select Switch
- Cassette Holder Switch
- Mechanism State Switch

1) Remove the five (5) screws.

Note: Perform the following adjustments after reinstalling the trouble sensor circuit board.
- 3. PHASE MATCHING ASSEMBLY in CHAPTER 3

C. Dew Sensor (Fig. 4-4)

Note: Although the dew sensor can be removed with the cassette holder attached (in the eject state), it is better to remove the holder to make the work easier.

1) Remove one (1) screw.

D. Pressure Roller (Fig. 4-4)

Components to remove in advance	Fig No.
• Cassette Holder	4-2

1) Remove one (1) washer.
2) Pull out the pressure roller from the pressure roller shaft.

Note 1: Reinstall the pressure roller so that pin (a) of the pressure roller drive arm is inserted into groove (b) in the pressure roller.

Note 2: Do not remove the spring of the pressure roller.

E. Pull-Out Pole, Pressure Roller Drive Arm and Pressure Roller Cam Gear (Figs. 4-3, 4-4)

Components to remove in advance	Fig No.
• Cassette Holder	4-2
• Pressure Roller	4-4

1) Remove one (1) screw. (See Fig. 4-4)
2) Move the pressure roller plate in the direction of the arrow and remove the pressure roller plate.
3) Remove the spring.

Note 1: Reinstall the pull-out pole so that pin (a) of this pole is inserted into groove (b) in the surface of the pressure roller cam gear. (See Figs. 4-3, 4-4)

Note 2: Reinstall the pressure roller drive arm so that pin (c) of this arm is inserted into groove (d) in the surface of the pressure roller cam gear. (See Figs. 4-3, 4-4)

Note 3: Reinstall the pressure roller cam gear so that pin (e) of the cassette holder lock arm is inserted into groove (f) on the back of the pressure roller cam gear. (See Figs. 4-3, 4-4)

F. Take-up Reel Brake (Fig. 4-4)

Components to remove in advance	Fig No.
• Cassette Holder	4-2

1) Remove one (1) washer.

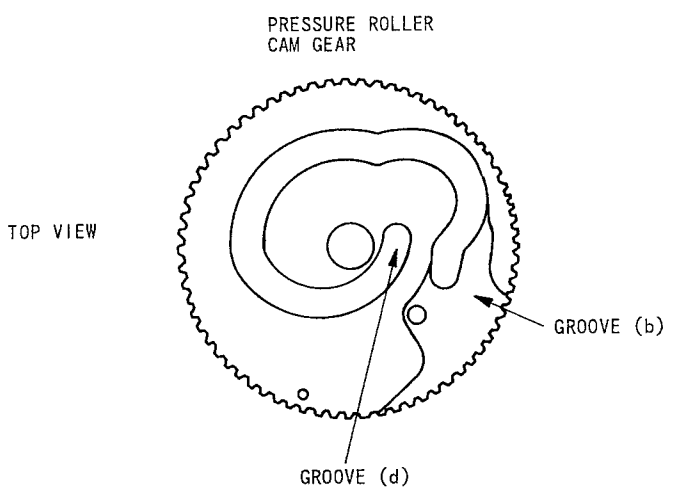


Fig. 4-3

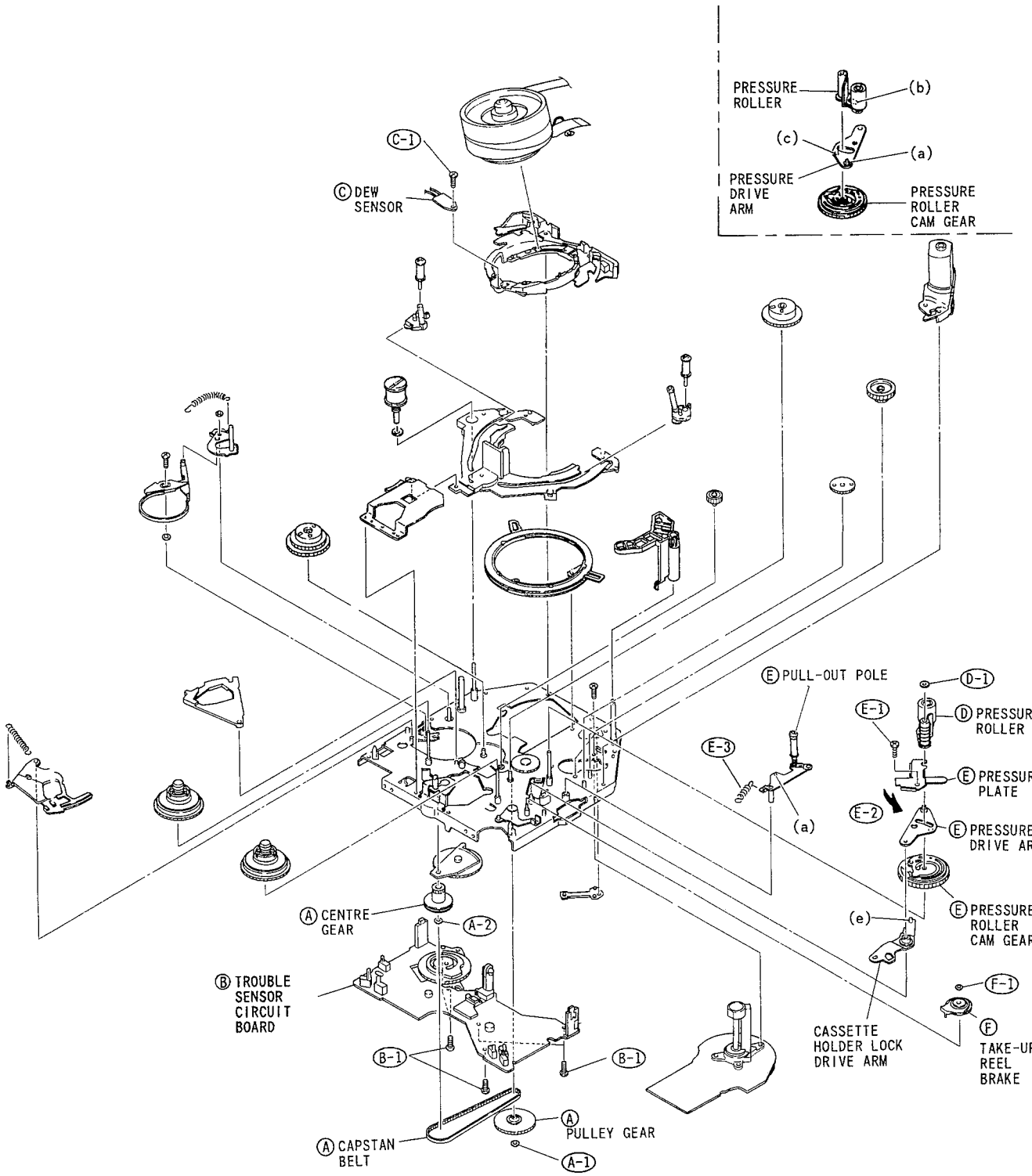

PRESSURE ROLLER
(b)
(c)
(a)
PRESSURE DRIVE ARM
PRESSURE ROLLER CAM GEAR
C-1
Ⓒ DEW SENSOR
Ⓔ PULL-OUT POLE
D-1
E-1
Ⓓ PRESSURE ROLLER
E-3
Ⓔ PRESSURE PLATE
(a)
E-2
Ⓔ PRESSURE DRIVE ARM
Ⓔ PRESSURE ROLLER CAM GEAR
(e)
Ⓐ CENTRE GEAR
A-2
Ⓑ TROUBLE SENSOR CIRCUIT BOARD
F-1
Ⓕ TAKE-UP REEL BRAKE
CASSETTE HOLDER LOCK DRIVE ARM
B-1
B-1
Ⓐ PULLEY GEAR
Ⓐ CAPSTAN BELT
A-1

Fig. 4-4

4.2 Others Parts

4.2.1 Supply Guide Roller, Take-up Guide Roller, Impedance Roller, Chassis Plate and Take-up Reel Disk Removal

Components to remove in advance	Fig No.
• Cassette Holder	4-2

A. Supply Guide Roller (Fig. 4-5)

1) Loosen one (1) screw.
2) Use the special screwdriver (to adjust the guide roller) to turn the top of the supply guide roller counterclockwise.

Note: Perform the following adjustment after reinstalling the supply guide roller.
- 4.4 Supply/Take-up Guide Roller Height Adjustment

B. Take-up Guide Roller (Fig. 4-5)

1) Loosen one (1) screw.
2) Use the special screwdriver (to adjust the guide roller) to turn the top of the take-up guide roller counterclockwise.

Note: Perform the following adjustment after reinstalling the take-up guide roller.
- 4.4 Supply/Take-up Guide Roller Height Adjustment

C. Impedance Roller (Fig. 4-5)

1) Use a flat-bladed screwdriver to turn the top of the impedance roller counterclockwise to remove it.

Note: Perform the following adjustment after reinstalling the impedance roller.
- 4.3 Pull-out Pole and Impedance Roller Height Check/Adjustment

D. Chassis Plate (Fig. 4-5)

1. Remove three (3) screws.

E. Take-up Reel Disk (Fig. 4-5)

Components to remove in advance	Fig No.
• Chassis Plate	4-5

1) Pull out the take-up reel disk from the take-up reel disk shaft.

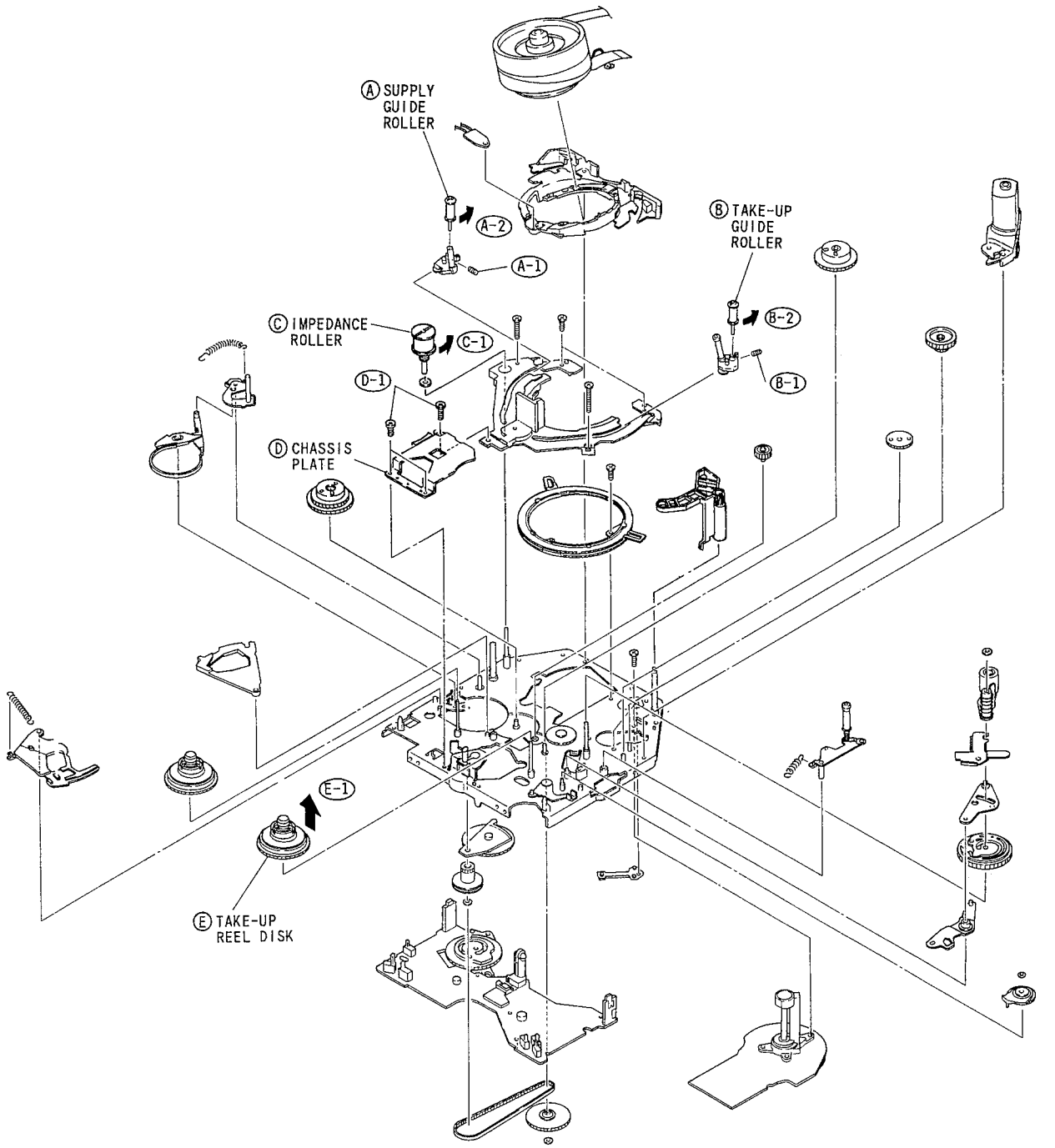

Ⓐ SUPPLY GUIDE ROLLER
A-2
A-1
Ⓑ TAKE-UP GUIDE ROLLER
B-2
B-1
Ⓒ IMPEDANCE ROLLER
C-1
D-1
Ⓓ CHASSIS PLATE
D
E-1
Ⓔ TAKE-UP REEL DISK

Fig. 4-5

4.2.2 Eject Lock Drive Arm, Tension Arm, Tension Band, Supply Reel Disk, Eject Arm, Supply Reel Brake Reel Drive Idler and Cylinder Base Removal

Components to remove in advance	Fig No.
• Cassette Holder	4-2

A. Eject Lock Drive Arm (Fig. 4-6)

Components to remove in advance	Fig No.
• Pressure Roller	4-4
• Pull-out Pole, Pressure Roller Drive Arm and Pressure Roller Cam Gear	4-4
• Take-up Reel Brake	4-4
• Chassis Plate	4-5
• Take-up Reel Disk	4-5

1) Remove the eject lock drive arm from the eject lock arm. (See Fig. 4-6)

Note: Reinstall the eject lock drive arm so that pin (b) of the eject lock arm is inserted into hole (a) in the eject lock drive arm.

B. Tension Arm and Tension Band (Fig. 4-6)

Components to remove in advance	Fig No.
• Chassis Plate	4-5
• Take-up Reel Disk	4-5

1) Remove the tension spring from the chassis and tension arm.
2) Remove one (1) screw.
3) Remove one (1) washer.
4) Release two (2) tabs and remove the tension band from the tension arm.

Note: Perform the following adjustment after reinstalling the tension arm and tension band.
- 4.1 Tension Pole Position/Tension Torque Adjustments

C. Supply Reel Disk and Eject Arm (Fig. 4-6)

Components to remove in advance	Fig No.
• Chassis Plate	4-5
• Take-up Reel Disk	4-5
• Tension Arm and Tension Band	4-6

1) Pull out the supply reel disk from the supply reel disk shaft.
2) Remove the eject arm.

Note: Reinstall the eject arm so that pin (c) of the arm is inserted into groove (d) in the mechanism state switch.

D. Supply Reel Brake (Fig. 4-6)

Components to remove in advance	Fig No.
• Chassis Plate	4-5
• Take-up Reel Disk	4-5
• Tension Arm and Tension Band	4-6

1) Remove the spring between the supply reel brake and chassis.
2) Remove the supply reel brake.

E. Reel Drive Idler (Fig. 4-6)

Components to remove in advance	Fig No.
• Loading Motor and Loading Gears (1) and (2)	4-2
• Capstan Motor	4-2
• Pulley Gear, Centre Gear and Capstan Belt	4-4
• Chassis Plate	4-5
• Take-up Reel Disk	4-5
• Tension Arm and Tension Band	4-6
• Supply Reel Disk and Eject Arm	4-6
• Supply Reel Brake	4-6

1) Remove the reel drive idler in the direction of the arrow.

Note: When removing the reel drive idler, take care not to lose the washer between the idler and chassis.

F. Cylinder Base (Fig. 4-6)

Components to remove in advance	Fig No.
• Static Discharge Brush	4-2
• Cylinder	4-2
• Tape Cover	4-2
• Dew Sensor	4-4

1) Remove three (3) screws.

Note: The cylinder base can be removed from the chassis with the cylinder attached.

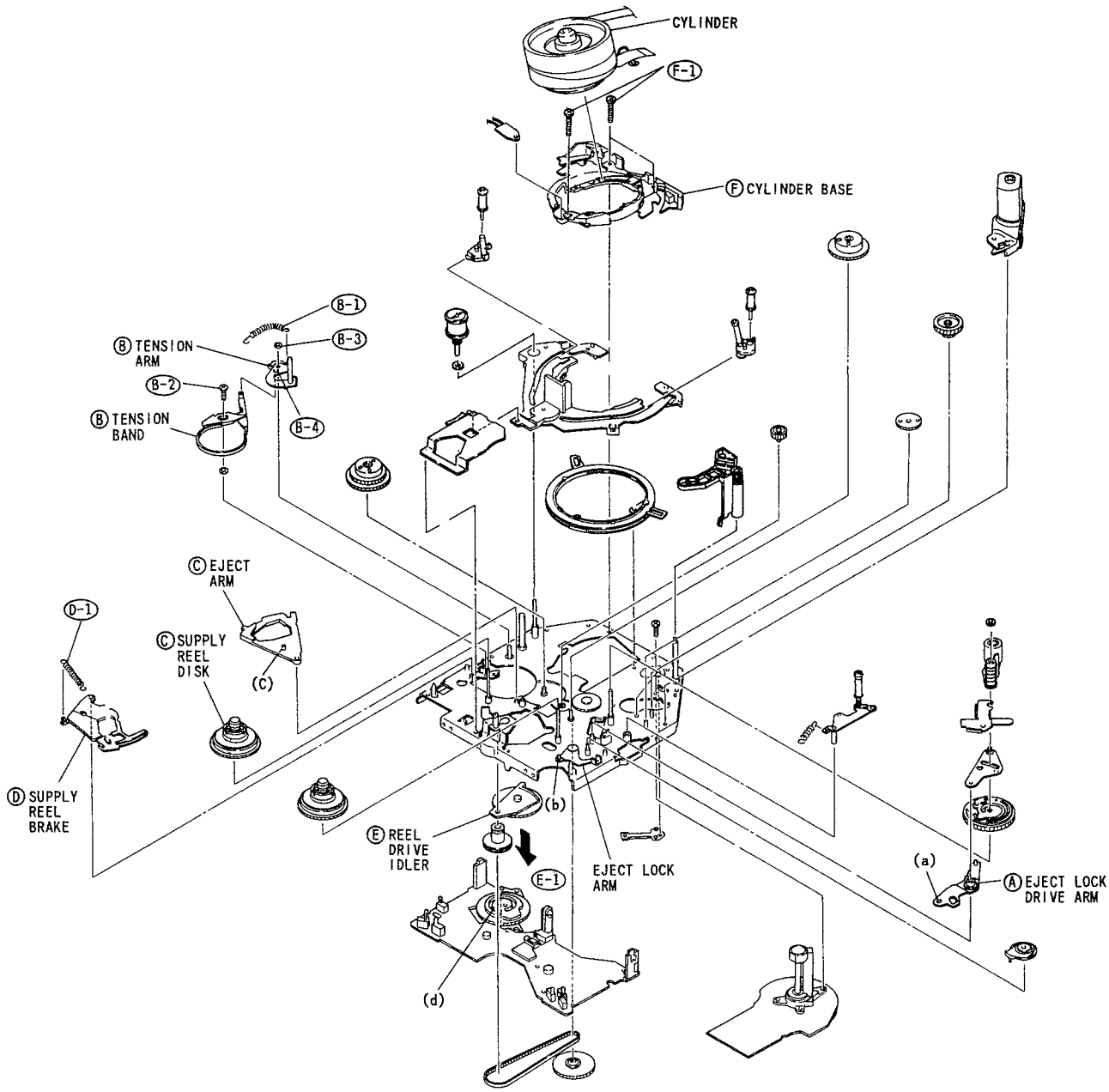

CYLINDER
F-1
Ⓕ CYLINDER BASE
B-1
B-3
Ⓑ TENSION ARM
B-2
Ⓑ TENSION BAND
B-4
Ⓒ EJECT ARM
D-1
Ⓒ SUPPLY REEL DISK
(C)
Ⓓ SUPPLY REEL BRAKE
(b)
Ⓔ REEL DRIVE IDLER
E-1
EJECT LOCK ARM
(a)
Ⓐ EJECT LOCK DRIVE ARM
(d)

Fig. 4-6

4.2.3 Guide Roller Rail, Supply and Take-up Guide Roller Bases, Loading Relay Gears (1), (2), Take-up and Supply Loading Rings and Loading Relay Gear (3) Removal

Components to remove in advance	Fig No.
• Cassette Holder	4-2
• Tape Cover	4-2
• Dew Sensor	4-4
• Pressure Roller	4-4
• Supply Guide Roller	4-5
• Take-up Guide Roller	4-5
• Impedance Roller	4-5
• Chassis Plate	4-5
• Take-up Reel Disk	4-5
• Tension Arm and Tension Band	4-6
• Cylinder Base (with the cylinder attached)	4-6

Note 1: It is not necessary to remove the supply and take-up guide rollers when removing only the guide roller rail or when removing the guide roller bases with the guide rollers assembled.
Note 2: The cylinder base can be removed from the chassis with the cylinder attached.

A. Guide Roller Rail (Fig. 4-7)

1) Remove two (2) screws.
2) Remove the guide roller rail and guide roller bases from the chassis.

Note: Perform the following adjustment after reinstalling the guide roller rail.
- 4.4 Supply/Take-up Guide Roller Height Adjustment

B. Supply Guide Roller Base (Fig. 4-7)

Components to remove in advance	Fig No.
• Guide Roller Rail	4-7

1) Remove the supply guide roller base along the groove in the rail in the direction of the arrow.

Note: Perform the following adjustment after reinstalling the supply guide roller base.
- 4.4 Supply/Take-up Guide Roller Height Adjustment

C. Take-up Guide Roller Base (Fig. 4-7)

Components to remove in advance	Fig No.
• Guide Roller Rail	4-7

1) Remove the take-up guide roller base along the groove in the rail in the direction of the arrow.

Note: Perform the following adjustment after reinstalling the take-up guide roller base.
- 4.4 Supply/Take-up Guide Roller Height Adjustment

D. Loading Relay Gear (1) (Fig. 4-7)

Components to remove in advance	Fig No.
• Guide Roller Rail	4-7

1) Remove one (1) washer.

Note: Perform the following adjustment after reinstalling loading relay gear (1).
- 3. PHASE MATCHING IN ASSEMBLY in CHAPTER 3.

E. Loading Relay Gear (2) (Fig. 4-7)

Components to remove in advance	Fig No.
• Guide Roller Rail	4-7

1) Remove loading relay gear (2) from the chassis.

Note: Perform the following adjustment after reinstalling loading relay gear (2).
- 3. PHASE MATCHING IN ASSEMBLY in CHAPTER 3.

F. Loading Ring (Fig. 4-7)

Components to remove in advance	Fig No.
• Guide Roller Rail	4-7

1) Remove one (1) screw.

Note: Perform the following adjustment after reinstalling the loading ring.
- 3. PHASE MATCHING IN ASSEMBLY in CHAPTER 3.

G. Loading Relay Gear (3) (Fig. 4-7)

Components to remove in advance	Fig No.
• Guide Roller Rail	4-7

1) Remove loading relay gear (3) from the chassis.

Note: Perform the following adjustment after reinstalling loading relay gear (3).
- 3. PHASE MATCHING IN ASSEMBLY in CHAPTER 3.

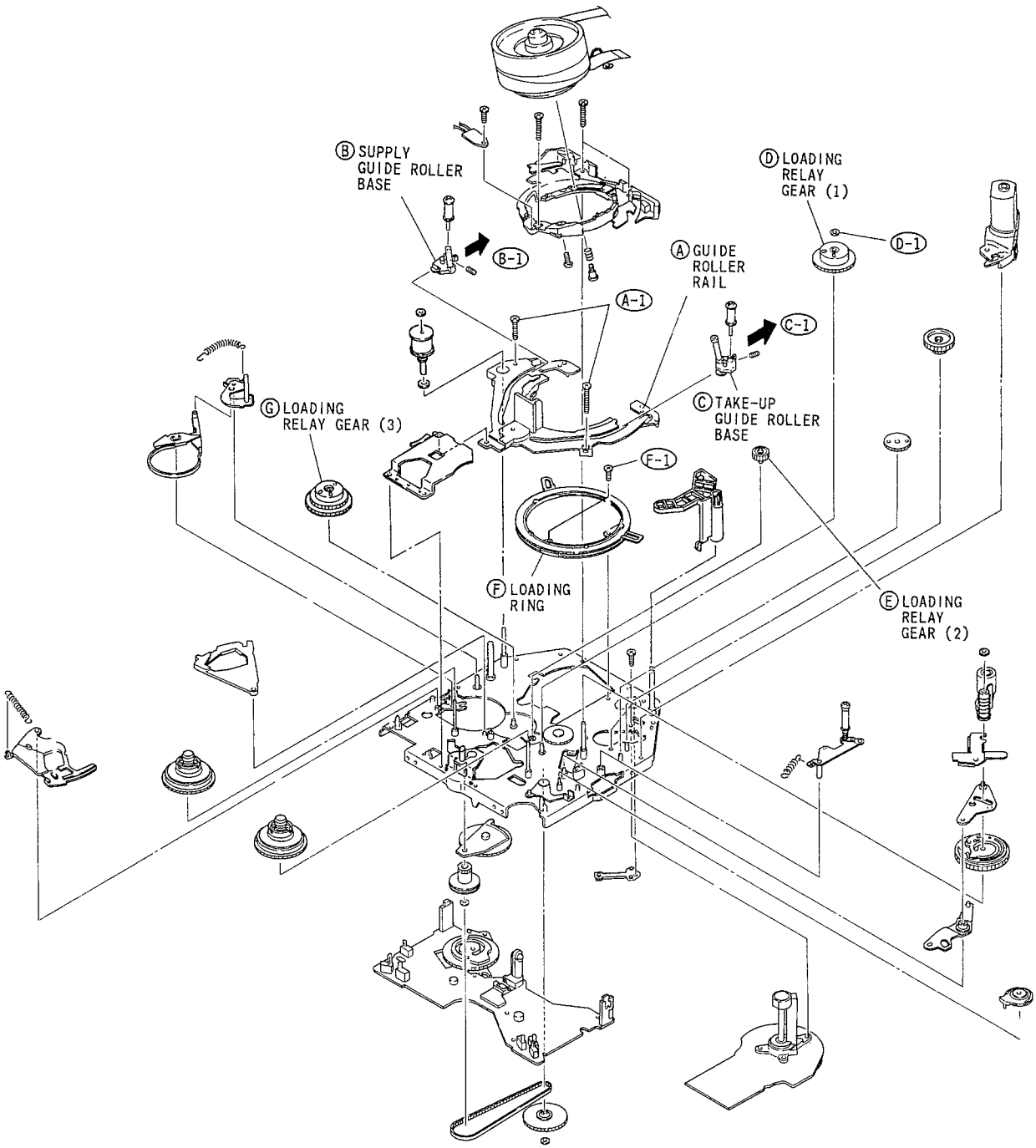
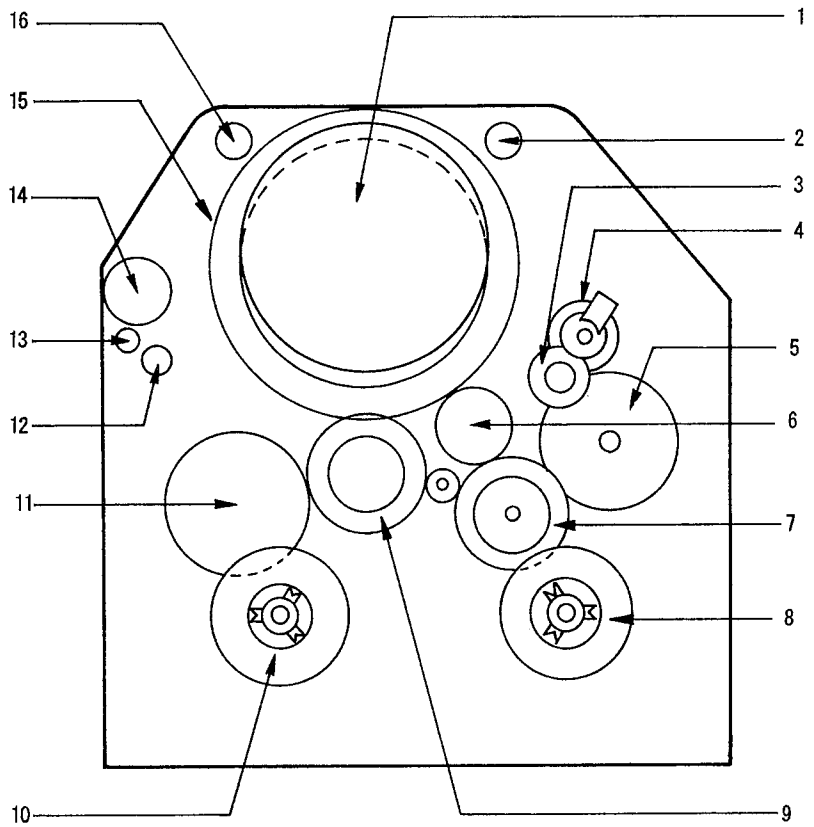

Ⓑ SUPPLY GUIDE ROLLER BASE
B-1
Ⓓ LOADING RELAY GEAR (1)
D-1
Ⓐ GUIDE ROLLER RAIL
A-1
C-1
Ⓒ TAKE-UP GUIDE ROLLER BASE
Ⓖ LOADING RELAY GEAR (3)
F-1
Ⓕ LOADING RING
Ⓔ LOADING RELAY GEAR (2)

Fig. 4-7

MECHANISM ADJUSTMENT

1. MAJOR MECHANICAL COMPONENTS



1. Cylinder
2. Take-up Guide Roller
3. Pressure Roller
4. Capstan Motor
5. Loading Cam Gear
6. Loading Relay Gear (4)
7. Loading Relay Gear (1)
8. Take-up Reel Disk
9. Loading Relay Gear (3)
10. Supply Reel Disk
11. Mechanism State Switch
12. Supply Guide Post
13. Tension Pole
14. Impedance Roller
15. Loading Ring
16. Supply Guide Roller

Fig. 1-1 Tape Transport Mechanism (Top View)

2. BEFORE STARTING ADJUSTMENT

- Be sure to set the camera/recorder to the unloading/stop mode when dismantling the tape transport block.
- Do not re-use washers once they have been removed.
- Remove the components shown below beforehand, referring to CAPTER 2 DISASSEMBLY.

Components to remove in advance	Fig. No
• Lens Hood Holder	3-2
• Top Cover	3-2
• Open the Right Case	3-2
• Main Block	3-4
• Main Circuit Board	3-5
• VTR Frame and Tape Transport Mechanism	3-5

- With this camera/recorder, mechanical adjustments (tape transport system check/ adjustment) can be done with the unassembled VTR block (without connecting the camera block).
- To set the camera/recorder to the playback mode without loading a cassette, shut off the light striking the end LEDs in the chassis and press the playback button. (Shut off the light striking the end LEDs in the eject state.)

3. PHASE MATCHING IN ASSEMBLY

Caution 1: Here, the phases of all components are aligned in the unloading/ stop mode. Be sure to set the camera/recorder to the unloading/ stop mode before dismantling the tape transport block.

Caution 2: Be sure to check and adjust when reinstalling the mechanism state switch, loading motor, gears and loading ring.

3.1 Mechanism State Switch [Mecha. State Sw] (Fig. 3-1)

●Procedure of phase matching in assembly

1) Align mark (A) and mark (a) on the mecha. state sw and mecha. state sw case.

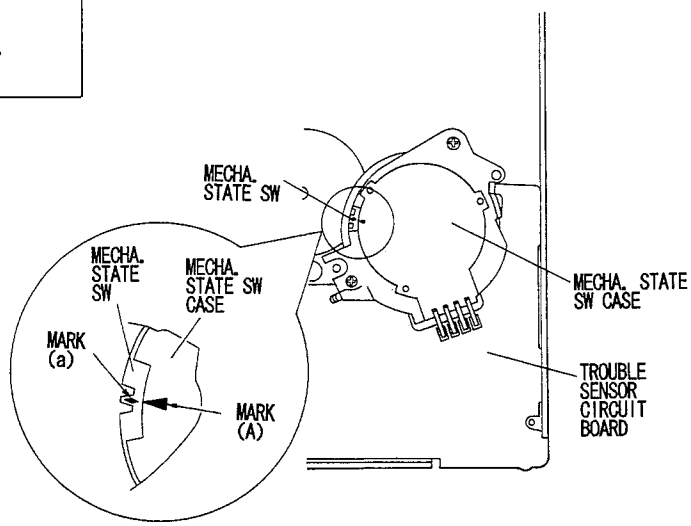


Fig. 3-1

3.2 Loading Gears and Loading Ring (Figs. 3-2, 3-3)

Caution: Be careful that the phase of the mechanism state switch which was matched in item 3-1 does not drift.

●Procedure of phase matching in assembly

1) Align the markings of the loading ring and gears as shown in Fig. 3-2.

Caution: When reinstalling the pressure roller cam gear, set the eject lock arm to the position shown in Fig. 3-3 and check that pin (K) is inserted in groove (k) in the back of the pressure roller cam gear.

Advice: If it is difficult to see marking (E) on the lower loading ring, match the phase by the following procedure.

① Set the upper and lower loading rings to the state shown in Fig. 3-2. (Watch the guide roller fixing section.)

② Move the upper and lower loading rings so that holes (I) overlap each other.

③ If holes (I) overlap each other, the phase of the loading ring is correct.

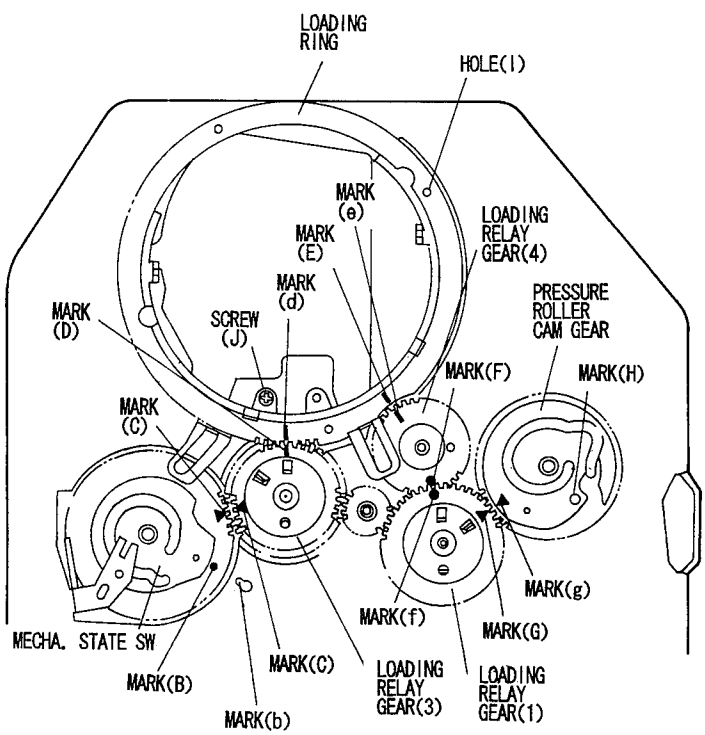


Fig. 3-2

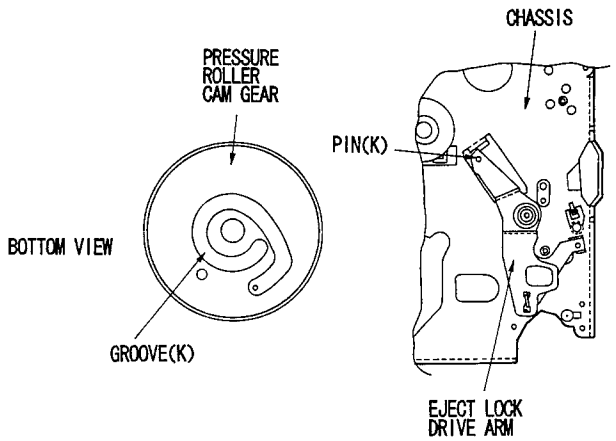


Fig. 3-3

4. TAPE TRANSPORT SYSTEM CHECK/ADJUSTMENT

The tape transport system is a generic term for the path from the supply reel disk to the take-up reel disk via the cylinder. The tape transport components, especially the components which come into direct contact with the tape, should be kept clean without damage, dust or oil, etc. adhering to the contact surfaces. The tape transport system is adjusted before shipment from the factory, so perform adjustments only when components of the transport system are replaced or adjustments of the transport system have drifted.

4.1 Tension Pole Position/Tension Torque Adjustments (Fig. 4-1)

Caution: Be sure to perform these adjustments after reinstalling the tension arm, tension band and tension spring.

Test equipment/jigs	Test equipment/jigs connection points	State of VTR	Adjustment point
		• Shut off the light striking the end LEDs and set to the playback mode without loading a cassette	• Tension band holder
• Cassette torque meter (SRK-8T-212)	• Load a cassette torque meter	• Set to the playback mode.	• Tension spring

●Adjustment procedure

◆Tension pole position adjustment (Fig. 4-1)

1) Hook the tension spring to position (B) of the supring holder.
2) Loosen screw (D) holding tension band holder (E).
3) Adjust the position of tension band holder (E) so the relationship between the hole in the tension arm and guide roller rail is as shown in Fig. 4-1.
4) Tighten screw (D).
5) Perform playback and stop several times and check that the specification in step 3) is satisfied. If it is not satisfied, re-adjust the tension pole position.

◆Tension torque adjustment (Fig. 4-1)

1) Hook the tension spring to position (B) of the supring holder.
2) Set the tension torque on the supply side to 4.5 - 6.0 g-cm.
   If it is more than 6.1 g-cm: Move the tension spring to position (A) of the spring holder.
   If it is less tha 4.4 g-cm: Move the tension spring to position (C) of the spring holder.

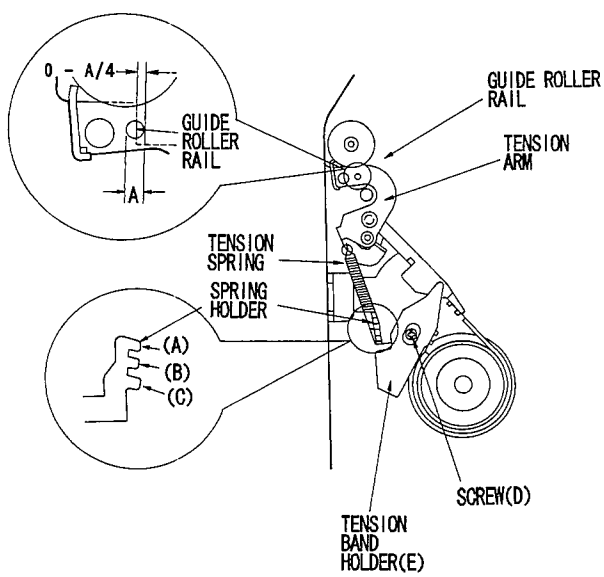


Fig. 4-1

4.2 Pull-out Pole and Impedance Roller Height Check/Adjustment (Figs. 4-2, 4-3)

Caution: Be sure to check this item after reinstalling the pull-out arm and impedance roller.
Basically, the pull-out pole height should not be adjusted.
Adjust the pull-out height only if it is abnormal.

Test equipment/jigs	Test equipment/jigs connection points	State of VTR	Adjustment point
• Blank tape (P5-90) • Special driver		• Load a blank tape and set to the playback mode.	• Top of pull-out pole

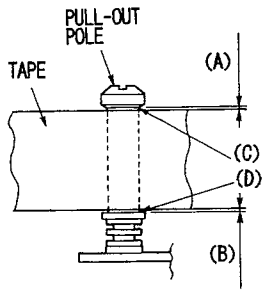
●Checking/adjustment procedure

◆Pull-out Pole

1) Check that the tape is running at the centre of the pull-out arm. If it is not, adjust the height of the arm.
2) Set to the reverse search mode.
3) Check that the tape is running between (C) and (D) and also no curling or creasing occurs.
4) If step 3) cannot be confirmed, fine adjust the height of the pull-out arm.

◆Impedance Roller

1) Check that there is no curling or creasing of the tape occurs around the impedance roller. If curling or creasing occurs, check the installation of the impedance roller.



(A) = (B)

Fig. 4-2

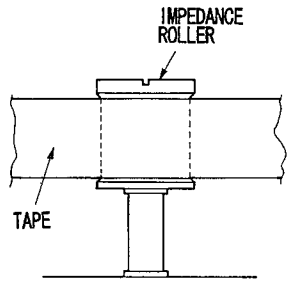


Fig. 4-3

4.3 Supply/Take-up Guide Roller Height Adjustment (Figs. 4-4, 4-5)

Caution: Be sure to check this item after reinstalling the supply guide roller and take-up guide roller.
Basically, the height of the supply/take-upguide rollers should not be adjusted.
Adjust these heights only if they are abnormal.

Test equipment/jigs	Test equipment/jigs connection points	State of VTR	Adjustment point
• Alignment tape • Oscilloscope • ATF-R jig • Special driver	• PG601 on Main board • TP1 (SW25) on ATF-R jig • TP2 (GND) on ATF-R jig • TP3 (FM OUT) on ATF-R jig	• Connect the ATF-R jig to PG601. • ATF-R jig (SW1: OFF, SW3: ON, RT1: mechanical centre)	• Top of guide rollers

●Adjustment procedure

Caution: Before performing this adjustment, refer to Fig. 7-1 and modify the ATF-R jig. Connect the ATF-R jig before supplying power.

1) Load an alignment tape that has been completely rewound. Press PLAY button and hold it, then set the POWER switch to VIDEO position.
2) Connect an oscilloscope to TP3 on the ATF-R jig.
3) Synchronize the oscilloscope with TP1 (SW25) on the ATF-R jig.
4) Set the osilloscope to (+) slope.

◆Take-up Guide Roller

5) Press SW2 on the ATF-R jig and hold it, then perform the fllowing steps.
6) Adjust the height of the take-up guide roller so the waveform is flat.
7) Set SW1 on the ATF-R jig to ON.
8) Turn RT1 on the ATF-R jig and check that the waveform always changes while being flat.
9) If step 8) cannot be confirmed, adjust the height of the guide roller precisely so the specifications in step 8) are satisfied.

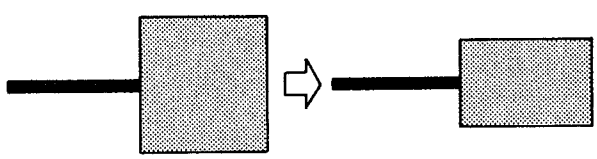


Fig. 4-4

◆Supply Guide Roller

10) Set the oscilloscope to (-) slope.
11) Turn RT1 on the ATF-R jig so the waveform is shaped as shown in Fig. 4-5.
12) Adjust the voltage level control of the oscilloscope so that portion (A) of the waveform is set to 3 graduations.
13) Adjust the height of the supply guide roller so the minimum amplitude of the waveform is set to 2.7 ± 0.3 graduations.

Caution: After adjustment is completed, be sure to reverse the modification to ATF-R jig.

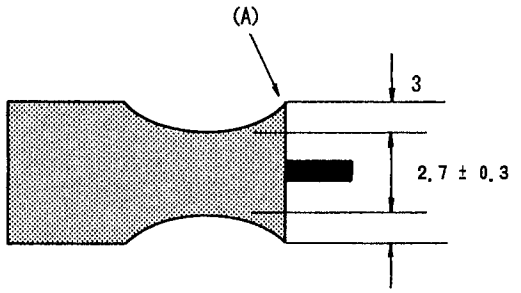


Fig. 4-5

5. ADJUSTMENT AFTER REPLACING THE CYLINDER (Figs. 5-1, 5-2)

When the cylinder is replaced, the height relative to the guide roller drifts, therefore the tape transport system and servo circuit should be adjusted. Check and adjust in the following order.

Test equipment/jigs	Test equipment/jigs connection points	State of VTR	Adjustment point
• Alignment tape • Oscilloscope • ATF-R jig • Special driver	• PG601 on Main board • TP1 (SW25) on ATF-R jig • TP2 (GND) on ATF-R jig • TP3 (FM OUT) on ATF-R jig	• Connect the ATF-R jig to PG601. • ATF-R jig (SW1: OFF, SW3: ON, RT1: mechanical centre)	• Top of guide rollers

●Adjustment procedure

Caution: Before performing this adjustment, refer to Fig. 7-1 and modift the ATF-R jig. Connect the ATF-R jig before supplying power.

1) Load an alignment tape that has been completely rewound. Press PLAY button and hold it, then set the POWER switch to VIDEO position.
2) Connect an oscilloscope to TP3 on the ATF-R jig.
3) Synchronize the oscilloscope with TP1 (SW25) on the ATF-R jig.
4) Set the oscilloscope to (+) slope.
5) Press SW2 on the ATF-R jig and hold it, then perform the following steps.
6) Set SW1 on the ATF-R jig to ON.
7) Turn RT1 on the ATF-R jig and check that the waveform always changes while being flat. (See Fig. 5-1) If this cannot be confirmed, adjust the height of the take-up guide roller, referring to "4.4 Supply/Take-up Guide Roller Height Adjustment".
8) Set the oscilloscope (-) slope.
9) Turn RT1 on the ATF-R jig so the waveform is shaped as shown in Fig. 5-2.
10) Adjust the voltage level control of the oscilloscope so that position (A) of the waveform is set to 3 graduations.
11) Check that the minimum amplitude of the waveform is set to 2.7 ± 0.3 graduations. If this cannot be confirmed, adjust the height of the supply guide roller, referring to "4.4 Supply/Take-up Guide Roller Height Adjustment".
12) Perform the following electrical adjustments, referring to CHAPTER 4.
    • Head switching point adjustment
    • Record luminance/chroma level adjustment

Caution: After adjustment is completed, be sure to reverse the modification to ATF-R jig.

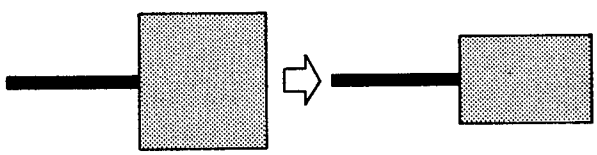


Fig. 5-1

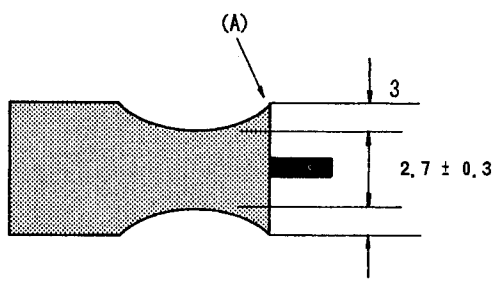


Fig. 5-2

6. CHECKING THE TORQUE

There are two types of cassette torque meter.
Choose the applicable one for the measurement to be performed.

Item	VTR mode	Measured reel disk	Torque value	Torque cassette used
Take-up torque	Playback	Take-up	7-13 g-cm	SRK-8T-212 SRK-8T-232
Rewind torque	Reverse search	Supply	25-37 g-cm	SRK-8T-232
Take-up brake torque	Reverse search to stop	Take-up	10 g-cm ro more	SRK-8T-212 SRK-8T-232
Slack removal torque	Unloading	Supply	25-37 g-cm	SRK-8T-232

7. MODIFICATION TO ATF-R JIG (Fig. 7-1)

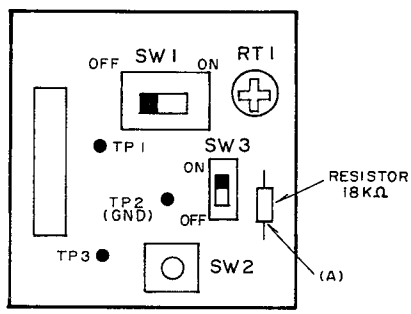
Caution: The ATF-R jig must be modified for the following adjustments.
After completing these, be sure to reverse the modification.
- 4.4 Supply/Take-up Guide Roller Height Adjustment
- 5. ADJUSTMENT AFTER REPLACING THE CYLINDER

●Procedure

1) Shout terminal (A) of the resistor and TP2 (GND) on the ATF-R jig.

Note: This modification makes SW2 on the ATF-R jig a PCM area observation switch.

Caution: Use a shorting clip, etc. to short the parts; this can be removed easily after adjustment is completed.
A modification is also necessary in the same way when the ATF jig is used.



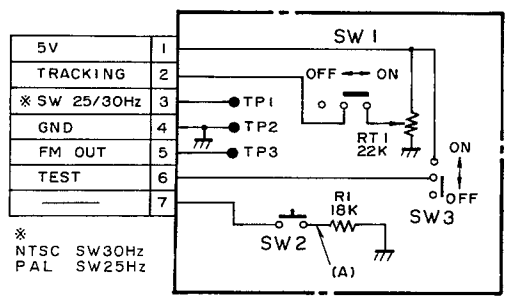


Fig. 7-1

MECHANICAL BLOCK MAINTENANCE/INSPECTION PROCEDURE

1. Required Maintenance/Inspection

The mechanical block (tape transport system) in an 8mm video camera/recorder uses very precise components. If any of these components is worn or dirty, the symptoms will be the same as if the component is defective.
To ensure a good picture, the tape transport system must be cleaned and lubricated periodically, and worn-out components must be replaced.

2. Scheduled Maintenance/Inspection

Schedules for maintenance and inspection are not fixed because they vary according to the way in which and what for the customer uses the camera/recorder and the environment in which it is used. But, in general home use, a good picture will be maintained if inspection and maintenance are done every 500 hours.
Refer to Table 4 for the components which must be maintained and inspected and the details of the maintenance/inspection schedules.
Lubricate oil when replacing components.

Table 1 Average hours used per day and maintenance/inspection schedules

Average hours per day	About 6 months ↓	About 9 months ↓	About 18 months ↓
One hour	▨	▨	▨
Two hours	▨		
Three hours	▨		

3. Check before Judging that Unit is Faulty

If the faults in Table 2 occur during playback, they may be remedied when the tape transport system is cleaned and lubricated. Check the conditions of cleanliness of the unit and the need for lubrication.
If from that you determine that the unit is ready for inspection and maintenance, check the components shown in Table 2.

Table 2 Defective Phenomena and Inspection Locations

Defective phenomenon during play	Inspection location
Poor picture S/N, no color	Dirt on vide head or worn video head
Tape does not run or tape is slack	Dirt on pressure roller, in tape transport system or/and on cylinder
Low volume or sound distorted	Dirt on video head or worn video head

4. Tools Needed for Inspection and Maintenance

(1) Head cleaning kit
(2) VTR oil kit
(3) Ethyl alcohol (ethanol)
(4) Gauze
(5) Cleaning tape Maxell 8M-CL MCA (dry type)

Table 3 Locations for Greasing and Lubricating using the Oil Kit

Name	Using locations
Sonic Slidas oil (#1600)	Lubricate low-speed rotating sections
Froil (G31-SAY)	Grease metal or molded sections subject to light load
Lock paint	Fix adjustment screws and nuts
Pan motor oil	Not used
Hitazol	Not used

The above VTR kit and head cleaning kit are those used conventionally (for VHS and VHS-C recorders). Always use these kits for maintenance.

5. Maintenance Procedures

5-1. Cleaning

(1) Cleaning video heads

First use a specified cleaning tape. Before using it, read its instruction sheet carefully. If the dirt on the video heads is too stubborn to be removed by tape, use the head cleaning kit by the following procedure. (See Fig. 1)

① Moisten the chamois leather on the cleaning stick with cleaning fluid.

② Touch the chamois leather on the cleaning stick against the head tip and gently turn the upper cylinder to the left and right.

Caution: Do not move the cleaning stick vertically or/and make sure that only the chamois leather on the cleaning stick comes into contact with the head tip. Otherwise, the head tip could be damaged.

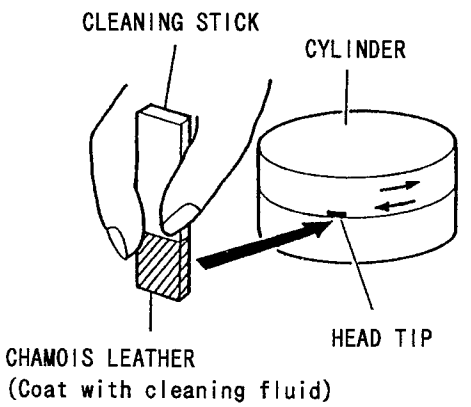


Fig. 1 Vide Head Cleaning Procedure

(2) Cleaning the tape transport system

Moisten gauze with ethyl alcohol and use it to wipe the surfaces of components which come into contact with the tape.

Caution: Be careful that the tape transport components are not damaged nor deformed by cleaning.

5-2. Lubricating Sonic Slidas Oil (#1600)

(1) Periodic lubrication

Lubricate the specified locations only when replacing components.
Normally, it is not necessary to lubricate in a period other than components are replaced.

(2) Procedure

Use the oiler to apply one or two drop of Sonic Slidas oil to the specified sections. Refer to the exploded views for the lubricating locations.

Caution: Do not use too much oil because it may spill over or leak, coming into contact with rotating parts and causing slippage or other defects.
If too much oil is applied, wipe clean using gauze moistened with ethyl alcohol.

5-3. Greasing the Froil (G31-SAY)

(1) Periodic greasing

Grease the specified locations only when replacing components.
Normally, it is not necessary to grease in a period other than components are replaced.

(2) Procedure

Apply Froil with a stick or brush to the specified locations. Refer to the exploded views for the greasing locations.

Caution: Do not use excess Froil. It may come into contact with the tape transport components and may cause defects.
Wipe off any excess using gauze moistened with ethyl alcohol.

Table 4 Parts to be Maintained/Inspected and Maintenance/Inspection Schedules

Caution: The following table dose not apply to all units. The maintenance/inspection schedules depend no how the unit is used and environment in which it is used.

Components \ Hours	500	1000	1500	2000	2500	3000
Video heads (Cylinder)	Clean	Clean/ Replace	Clean	Clean/ Replace	Clean	Clean/ Replace
Supply guide roller	Clean	Clean	Clean	Clean	Clean	Clean
Take-up guide roller	Clean	Clean	Clean	Clean	Clean	Clean
Supply guide pole	Clean	Clean	Clean	Clean	Clean	Clean
Impedance roller	Clean	Clean	Clean	Clean	Clean	Clean
Tension pole	Clean	Clean	Clean	Clean	Clean	Clean
Pull-out pole	Clean	Clean	Clean	Clean	Clean	Clean
Pressure roller	Clean	Clean	Clean	Clean/ Replace	Clean	Clean
Supply reel disk	———	———	———	Replace	———	———
Take-up reel disk	———	———	———	Replace	———	———
Tension band	———	Replace	———	Replace	———	Replace
Capstan belt	———	———	———	Replace	———	———
Reel drive idler	———	———	———	Replace	———	———
Capstan motor shaft (Capstan motor)	Clean	Clean	Clean	Clean/ Replace	Clean	Clean
Loading motor	———	———	———	Replace	———	———

ELECTRICAL ADJUSTMENT

Note 1: The digital adjustment programme for the camera is called the MAP (Manual Adjustment Programme).
Note 2: DSP is an abbreviation for the digital signal processor.

1. CONNECTION FOR ADJUSTMENT

Remove the components, etc. listed below first, referring to CHAPTER 2 DISASSEMBLY. (See Fig. 1-1)

Note 1: It is not necessary to remove cases for digital, autofocus and system control/ servo circuits adjustments.

ORDER FOR REMOVING PARTS	Fig No.
• Cassette lid, Lens Hood Holder, Top Cover, and Right Case	3-1, 3-2

Note 2: To perform the electronic volume adjustment, remove the following components and then use an extension cable to connect the camera/recorder and test equipment so the camera and main blocks can be adjusted.

ORDER FOR REMOVING PARTS	Fig No.
• Main Block, Camera Block, MIC and Left Case	3-4

Note 3: If it is necessary to display operation modes, connect the EVF.

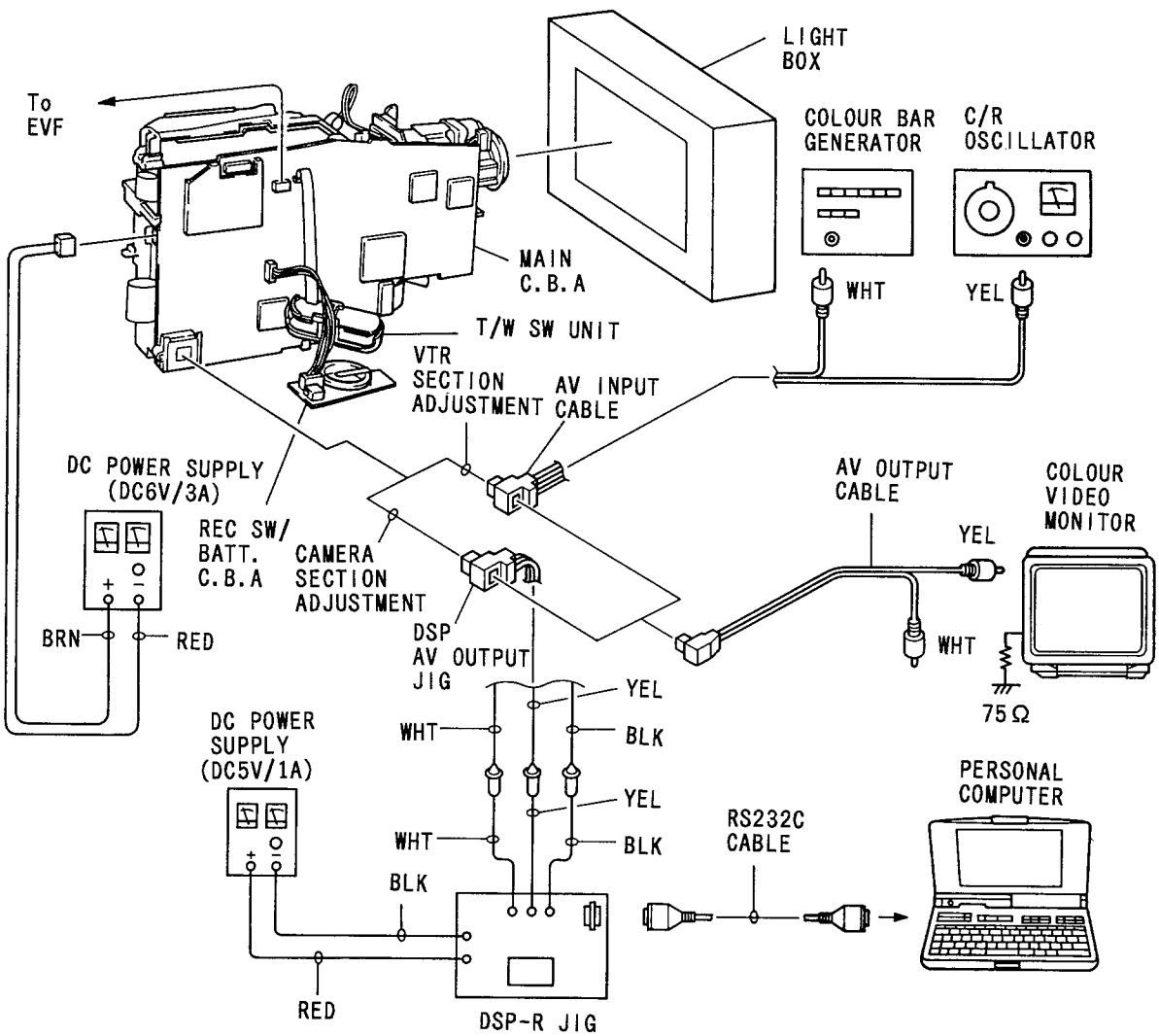


Fig. 1-1

2. CAMERA SECTION ADJUSTMENT

2.1 CIRCUIT BOARD LOCATIONS

1. Main Circuit Board
2. Sensor Circuit Board
3. T/W SW Unit
4. REC SW/Batt. Circuit Board

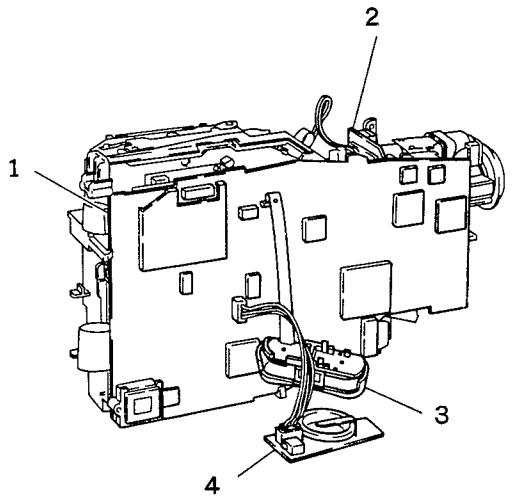


Fig. 2-1

2.2 TEST EQUIPMENT AND CHARTS NECESSARY FOR ADJUSTMENT

- Test Equipment
  - Oscilloscope (dual trace)
  - [Vectorscope]
  - Digital Voltmeter (DVM)
  - Frequency Counter
  - Colour Video Monitor
- Charts, etc.
  - Adjustment Floppy Disk
  - Personal Computer
  - Personal Computer 9-pin or 25-pin (RS232C) Cable
  - DSP-R Jig
  - DSP AV Output Cable
  - Gray Scale Chart
  - Colour Bar Chart
  - Resolution Chart
  - Backfocus Adjustment Chart
  - Light Box (3100°K)
  - Light Balancing Filter C12
  - DC Power Supply (DC6V/3A)
  - DC Power Supply (DC5V/1A)

2.3 ADJUSTMENT CONDITION

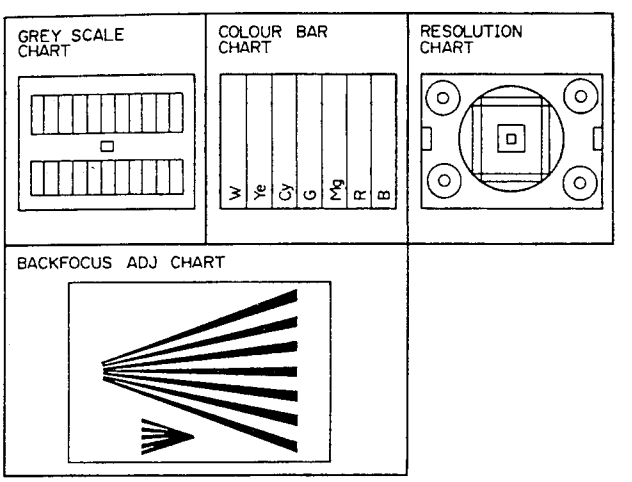
1) Check that the VTR section has been adjusted correctly before adjusting the camera section.
2) Use a light box with minimum flickering. Control the colour temperature of the light box strictly.
3) Connect this unit, a power supply and a colour video monitor as shown in Fig. 1-1.
4) When using the video out (AV OUT) to perform adjustment, be sure to terminate the AV OUT jack with 75 ohms.
5) Place the chart (light box) approx. 30cm away from the camera (lens surface) when otherwise not specified.
6) Point the camera at the chart to full the video period when otherwise not specified.
7) Use the 10:1 probe of the oscilloscope when otherwise not specified.
8) When "Trigger the oscilloscope internally" is specified, set the time base of the oscilloscope to 10μs/div.

2.4 PRESET POSITIONS OF SWITCHES AND CONTROLS DURING ADJUSTMENT

- CAMERA/OFF/VIDEO switch ..... "CAMERA" position
- INST. ZOOM ..... Not Display mode
- DATE ..... Not Display mode
- DISPLAY ..... Not Display mode
- TITLE ..... Not Display mode

2.5 LIST OF CHARTS FOR CAMERA ADJUSTMENT

Table 2-1



2.6 ADJUSTMENTS AFTER REPLACING MAJOR COMPONENTS IN THE CAMERA SECTION

After replacing major components, perform adjustments, referring to the table below.
The following table shows the minimum adjustments required after major components are replaced.
The table below may not apply when several components are replaced, depending on the symptom of the defect.

Caution : When EEP ROM or the main circuit board is replaced, initialize the EEP ROM, referring to "2.7.3 Initial Setting by Model", then perform all the camera section and system control/ servo circuits adjustments.

ITEM No.	NAME OF ADJUSTMENT	NAME OF MAJOR COMPONENTS							
		SENSOR C.B.A	MAIN C.B.A	IC1001	IC1101	IC1105	IC1106	IC1109	IC1110
——	Initial Setting by Model		●				●		
ELECTRIC VOLUME ADJUSTMENT PROCEDURE									
(1)	Sensor Drive Voltage Adjustment		●				●		●
(2)	CDS Offset Adjustment		●		●		●		
(3)	Sensor Drive Pulse & Sub Voltage Adjustment	●	●	●			●		●
(4)	VCO Lock Voltage Adjustment	●	●	●			●		
DIGITAL ADJUSTMENT PROCEDURE									
(1)	Auto Iris Control Adjustment	●	●	●	●	●	●	●	
(2)	Knee Adjustment		●		●		●		
(3)	Matrix Adjustment	●	●	●	●		●		
(4)	White balance Adjustment	●	●	●	●		●		
(5)	Chroma gain Adjustment	●	●	●	●		●		
AUTO FOCUS ADJUSTMENT PROCEDURE									
(1)	Zoom Trace Adjustment		●				●		
(2)	AF Noise Level Adjustment		●				●		

2.7 CAMERA SECTION ADJUSTMENT PROCEDURE

Note 1: The digital adjustment programme for camera is called the MAP (Manual Adjustment Programme).

Note 2: To complete adjustment, press the [ESC] (escape) key twice to restore the MS-DOS screen and then turn off the camera recorder and jigs.

2.7.1 Connections for Adjustment

Connect the camera/recorder, DSP jig, personal computer, power supply, etc. as shown in Fig. 1-1.

Note 1: Check that the camera/recorder is turned on.

2.7.2 How to Start the Adjustment Programme (MAP)

Note 1: The following describes an example of the instructions of the personal computer and the menu display; they are different depending on the personal computer manufacturer and model.
Refer to the instruction manual of personal computer.

```
F>
```

Fig. 2-2

⬇

LOAD THE CAMERA ADJ. FLOPPY DISK INTO DISK DRIVE B

⬇

Press [B] [:] [ENTER]

⬇

```
F>B:
B>
```

Fig. 2-3

⬇

Press [M] [A] [P] [_] [I] [B] [M] [(SPACE)] [1] [ENTER]

⬇

```
F>B:
B>MAP_IBM 1
```

Fig. 2-4

⬇

1) Turn the personal computer on and start the MS-DOS system. (Fig. 2-2)

Note 2: Refer to the instruction manual of the personal computer for how to start the computer.

2) Load the adjustment floppy disk into disk drive B and press [B] [:] then [ENTER]. (B may be small letter.) (Fig. 2-3)

Note 3: If the adjustment floppy disk is loaded into disk drive A, press [A] [:] then [ENTER].

3) Press [M] [A] [P] [_] [I] [B] [M] [(SPACE)] [1] then [ENTER] (MAP and IBM may be small letters). The digital adjustment programme (MAP: Manual Adjustment Programme) starts and the MODEL SELECT shown Fig. 2-6 appears.

Note 4: When you use a personal computer with two serial interface connectors and connect the DSP jig to serial interface connector 2, press MAP_IBM 2.

4) Select the number accodding to the model. If [ESC] (escape) is pressed, the display before the MAP starts (MS-DOS) is restored.

Note 5: If you specify the wrong model, press [ESC] (escape) to restore the MODEL SELECT display, then specify the correct model.

Note 6: If you select number without a model name by mistake, the message shown in Fig. 2-8 will appear in the computer's display. Press any key to return the display to Fig. 2-6 (MODEL SELECT).

Note 7: If there are more than 5 models and [P] is pressed, the computer's display changes to the next page.

Refer to "2.7.3 Initial Setting by Model" for DATA INITIALIZE.

Refer to "2.7.4 Electric Volume Adjustment Procedure" for ELECTRIC VOLUME.

Refer to "2.7.5 Digital Adjustment Procedure" for ADJUSTMENT.

Refer to "2.7.6 Autofocus Adjustment Procedure" for AUTO FOCUS.

Refer to "3. VTR SECTION ADJUSTMENT" for VTR ADJUSTMENT.

⬇

```
Manual adjustment program for service station
        Copyright (C) Hitachi LTD
```

Fig. 2-5

⬇

MODEL SELECT

```
**********************************************
*************** MODEL SELECT *****************
**********************************************
          [1]   XXXXXXXX
          [2]   XXXXXXXX
          [3]   XXXXXXXX
          [4]   XXXXXXXX
          [5]   XXXXXXXX
          [P]   NEXT SELECTION
          [ESC] END
    Please select the type of the set.
     Hit [1] - [5] or [P] or [ESC]
```

Fig. 2-6

⬇

Press numeric key

⬇

MAIN MENU

```
**********************************************
********* MANUAL ADJUSTMENT PROGRAM ***********
**********************************************
          [A]   DATA INITIALIZE
          [B]   ELECTRIC VOLUME
          [C]   ADJUSTMENT
          [D]   AUTO FOCUS
          [E]   VCR ADJUSTMET
          [ESC] END
Please select [A], [B], [C], [D], [E] or [ESC]
```

Fig. 2-7

MESSAGE WHEN OPERATED BY MISTAKE

```
        Can not find the DATA FILE
        **** HIT ANY KEY ****
```

Fig. 2-8

2.7.3 Initial Setting by Model

Note 1: This item describes how to initialize the EEP ROM. Be sure to perform this item after replacing EEP ROM or the main circuit board. When other components are replaced, normally, it is not necessary to initialize the EEP ROM.
Press [ESC] (escape) to return the computer's display to MAIN MENU.

1) Start the MAP, referring to "2.7.2 How to Start the Adjustment Programme (MAP)".
2) Press [A] to select INITIALIZE. (Figs. 2-9, 2-10)
3) Press [Y] to start. (Figs. 2-10, 2-11)

Note 2: Press [N] to return to MAIN MENU. (Fig. 2-10)

4) If there are no abnormalities in the camera/recorder, the message shown in Fig. 2-11 is displayed in the computer's display for a while, and then the message informing you that the initial setting has been completed (shown in Fig. 2-12) is displayed.
5) If the message shown in Fig. 2-12 appears in the computer's display, press any key. The computer's display returns to Fig. 2-9 (MAIN MENU).
6) Be sure to perform the following adjustments after completing the initial setting.
   - 2.7.4 Electric Volume Adjustment Procedure
   - 2.7.5 Digital Adjustment Procedure
   - 2.7.6 Autofocus Adjustment Procedure
   - 3.7 System Control/Servo Circuits Adjustment

Note 3: If an error message appears in the computer's display, refer to "4. Error Messages". If a key is pressed after the error message appears, the computer's display returns to the MAIN MENU (Fig. 2-9)

MAIN MENU

```
**********************************************
******** MANUAL ADJUSTMENT PROGRAM ***********
**********************************************
          [A]   DATA INITIALIZE
          [B]   ELECTRIC VOLUME
          [C]   ADJUSTMENT
          [D]   AUTO FOCUS
          [E]   VCR ADJUSTMET
          [ESC] END
Please select [A], [B], [C], [D], [E] or [ESC]
```

Fig. 2-9

⬇

Press [A]

⬇

```
<< DATA WRITING >>
   START TO SEND DATA.          (Y/N)
```

Fig. 2-10

⬇

Press [Y]

⬇

```
PLEASE WAIT A MOMENT
```

Fig. 2-11

⬇

```
FINISHED WRITING DATA !!
PRESS ANY KEY !
```

Fig. 2-12

⬇

Press any key to return to Fig. 2-9

2.7.4 Electric Volume Adjustment Procedure

Note 1: When EEP ROM or the main circuit board is replaced, initialize the EEP ROM, referring to "2.7.3. Initial Setting By Model" then perform all the electric volume adjustments.

1) Start the MAP, referring to "2.7.2 How to Start the Adjustment Programme (MAP)".
2) Press [B] to select ELETRIC VOLUME. (Figs. 2-13, 2-14)
3) Select the number of the required adjustment.

Note 2: If [ESC] (escape) is pressed, the computer's display returns to Fig. 2-13 (MAIN MENU).

Note 3: To complete adjustment, press the [ESC] (escape) key twice to restore the MS-DOS screen and then turn off the camera/ recorder and jig.

Note 4: When an error message appears during adjustment, refer to "4. Error Messages".

MAIN MENU

```
**************************************************
********* MANUAL ADJUSTMENT PROGRAM ***********
**************************************************
          [A]   DATA INITIALIZE
          [B]   ELECTRIC VOLUME
          [C]   ADJUSTMENT
          [D]   AUTO FOCUS
          [E]   VCR ADJUSTMET
          [ESC] END
Please select [A], [B], [C], [D], [E] or [ESC]
```

Fig. 2-13

⬇

Press [B]

⬇

ELECTRIC VOLUME ADJ. MENU

```
**************************************************
************** ELECTRIC VOLUME ****************
**************************************************
  [1]   SENSOR DRIVE VOLTAGE
  [2]   CDS OFFSET
  [3]   SENSOR DRIVE PULSE & SUB VOLTAGE
  [4]   VCO LOCK VOLTAGE
  [ESC] RETURN TO MAIN MENU
 Please select [1], [2], [3], [4] or [ESC]
```

Fig. 2-14

ADJUSTMENT PARTS LOCATION

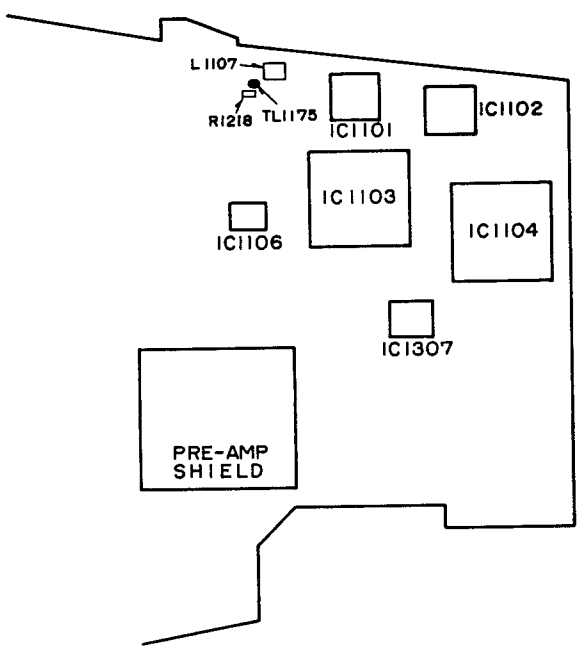


Fig. 2-15 Main Circuit Board (B Side)

(1) Sensor Drive Voltage Adjustment (Fig. 2-15)

PURPOSE	·To measure the supply voltage of the CCD sensor.
INCOMPLETED PHENOMENON	·The CCD sensor output level drops and the picture is distorted.
TEST POINT	·TL1175 MAIN ·JK200-9 (GND : Black lead of DSP Output jig
EQUIPMENT/JIG	·DVM
CONDITION	———

PROCEDURE

ELECTRIC VOLUME ADJ. MENU

```
**********************************************
************** ELECTRIC VOLUME ****************
**********************************************
   [1]    SENSOR DRIVE VOLTAGE
   [2]    CDS OFFSET
   [3]    SENSOR DRIVE PULSE & SUB VOLTAGE
   [4]    VCO LOCK VOLTAGE
   [ESC]  RETURN TO MAIN MENU
  Please select [1], [2], [3], [4] or [ESC]
```

Press [1] key to select the sensor drive voltage.

```
  << ADJUSTMENT OF SENSOR DRIVE VOLRAGE >>
  SET VOLTAGE OF TL1175 AT 15 (+/- 0.1) V.
                [U]    UP
                [D]    DOWN
```

Press the [U] and [D] keys to set the voltage to 15V ± 0.1V.

Press [ENTER] key, and the display changes as follows.

```
        ADJUSTMANT FINISHED
        PRESS ANY KEY !
```

Press any key to return to ELECTRIC VOLUME ADJ. MENU.

(2) CDS Offset Adjustment

PURPOSE	·To determine the DC offset levels when the AGC is set to the minimum and maximum gains.
INCOMPLETED PHENOMENON	·When a subject is illuminated brightly in low lighting, a white band appears across the top of the screen.
TEST POINT	———
EQUIPMENT/JIG	———
CONDITION	———

PROCEDURE

ELECTRIC VOLUME ADJ. MENU

```
**********************************************
************** ELECTRIC VOLUME ****************
**********************************************
   [1]    SENSOR DRIVE VOLTAGE
   [2]    CDS OFFSET
   [3]    SENSOR DRIVE PULSE & SUB VOLTAGE
   [4]    VCO LOCK VOLTAGE
   [ESC]  RETURN TO MAIN MENU
  Please select [1], [2], [3], [4] or [ESC]
```

Press [2] key to select the CDS offset.

```
      << ADJUSTMENT OF CDS OFFSET >>
        PLEASE WAIT AROUND 50 SEC.
```

```
      << ADJUSTMENT OF CDS OFFSET >>
        FINISHED WRITING DATA.
        ADJUSTMENT FINISHED.
        PRESS ANY KEY !
```

Press any key to return to ELECTRIC VOLUME ADJ. MENU.

(3) Sensor Drive Pulse and Sub Voltage Adjustment

PURPOSE	·To determine the level of the pulse output from the CCD sensor. To determine the bias voltage of the CCD sensor.
INCOMPLETED PHENOMENON	·No picture. ·No colour. ·Rough picture. ·Smear occurs.
TEST POINT	————
EQUIPMENT/JIG	————
CONDITION	·Point the camera at the light box without a chart to full the screen (at wide-angle).

PROCEDURE

ELECTRIC VOLUME ADJ. MENU

```
**********************************************
************** ELECTRIC VOLUME ****************
**********************************************
   [1]    SENSOR DRIVE VOLTAGE
   [2]    CDS OFFSET
   [3]    SENSOR DRIVE PULSE & SUB VOLTAGE
   [4]    VCO LOCK VOLTAGE
   [ESC]  RETURN TO MAIN MENU
  Please select [1], [2], [3], [4] or [ESC]
```

Press [3] key to select the sensor drive pulse & sub voltage.

```
<< ADJUSTMENT OF SUB VOLTAGE &
                    SENSOR DRIVE PULSE >>
PLEASE INPUT SENSOR'S SEAL
                  NUMBER FROM KEY BOARD==>
```

Check the number in the seal at the back of the CCD image sensor and enter the number into the personal computer.

Press [ENTER] key, and the display changes as follows.

```
<< ADJUSTMENT OF SUB VOLTAGE &
                    SENSOR DRIVE PULSE >>
            << NOW ADJUSTING >>
```

```
<< ADJUSTMENT OF SUB VOLTAGE &
                    SENSOR DRIVE PULSE >>
            ADJUSTMENT FINISHED.
               PRESS ANY KEY.
```

Press any key to return to ELECTRIC VOLUME ADJ. MENU.

(4) VCO Lock Voltage Adjustment

PURPOSE	·To synchronize the horizontal sync signal with the subcarrier frequency.
INCOMPLETED PHENOMENON	·The picture is distorted.
TEST POINT	————
EQUIPMENT/JIG	————
CONDITION	————

PROCEDURE

ELECTRIC VOLUME ADJ. MENU

```
**********************************************
************** ELECTRIC VOLUME ****************
**********************************************
   [1]    SENSOR DRIVE VOLTAGE
   [2]    CDS OFFSET
   [3]    SENSOR DRIVE PULSE & SUB VOLTAGE
   [4]    VCO LOCK VOLTAGE
   [ESC]  RETURN TO MAIN MENU
  Please select [1], [2], [3], [4] or [ESC]
```

Press [4] key to select the VCO lock voltage.

```
<< ADJUSTMENT OF VCO LOCK VOLTAGE >>
      PLEASE WAIT AROUND 50 SEC.
```

```
<< ADJUSTMENT OF VCO LOCK VOLTAGE >>
      FINISHED WRITING DATA.
      ADJUSTMENT FINISHED.
        PRESS ANY KEY !
```

Press any key to return to ELECTRIC VOLUME ADJ. MENU.

2.7.5 Digital Adjustment Procedure

Note 1: When EEP ROM or the main circuit board is replaced, initialize the EEP ROM, referring to "2.7.3. Initial Setting By Model" then perform all the digital adjustments.

Note 2: When an error message appears during adjustment, refer to "4. Error Messages". If a key is pressed after an error message appears, the ADJUSTMENT MENU is restored.

1) Start the MAP, referring to "2.7.2 How to Start the Adjustment Programme (MAP)"

2) Press [C] to select ADJUSTMENT. (Figs. 2-16, 2-17)

3) Select the number of the required adjustment.

Note 3: If [ESC] (escape) is pressed, the computer's display returns to Fig. 2-16 (MAIN MENU).

Note 4: To complete adjustment, press the [ESC] (escape) key twice to restore the MS-DOS screen and then turn off the camera/ recorder and jig.

Caution: Perform auto iris adjustment [1. AUTO IRIS CONTROL] and knee adjustment [2. KNEE] in the following order.

1. Auto Iris Adjustment (Perform the following autofocus adjustment if "ADJUSTMENT OF HALL CURVE" is not completed).
2. Zoom Trace Adjustment in AUTOFOCUS ADJUSTMENT PROCEDURE.
3. AF Noise Level Adjustment in AUTOFOCUS ADJUSTMENT PROCEDURE.
4. Auto Iris Adjustment (All three items, "ADJUSTMENT OF IRIS OPEN & CLOSE", " ADJUSTMENT OF IRIS" and "ADJUSTMENT OF HALL CURVE" should be complete).
5. Knee Adjustment .

MAIN MENU

```
**********************************************
********* MANUAL ADJUSTMENT PROGRAM ***********
**********************************************
          [A]   DATA INITIALIZE
          [B]   ELECTRIC VOLUME
          [C]   ADJUSTMENT
          [D]   AUTO FOCUS
          [E]   VCR ADJUSTMET
          [ESC] END
Please select [A], [B], [C], [D], [E] or [ESC]
```

Fig. 2-16

⬇

Press [C]

⬇

ADJUSTMENT MENU

```
**********************************************
*************** ADJUSTMENT *******************
**********************************************
          [1]   AUTO IRIS CONTROL
          [2]   KNEE
          [3]   MATRIX
          [4]   WHITE BALANCE
          [5]   CHROMA GAIN
          [ESC] RETURN TO MAIN MENU
Please select [1], [2], [3], [4], [5] or [ESC]
```

Fig. 2-17

(1) Auto Iris Control Adjustment

Note 1: Perform this adjustment, following the order described in "Caution" on the previous page.

PURPOSE	·To set the iris control data.
INCOMPLETED PHENOMENON	·The picture becomes too bright. ·The picture becomes too dark.
TEST POINT	————
EQUIPMENT/JIG	————
CONDITION	·Point the camera at the light box without a chart to full the screen (at wide-angle).

PROCEDURE

ADJUSTMENT MENU

```
**********************************************
*************** ADJUSTMENT *******************
**********************************************
          [1]   AUTO IRIS CONTROL
          [2]   KNEE
          [3]   MATRIX
          [4]   WHITE BALANCE
          [5]   CHROMA GAIN
          [ESC] RETURN TO MAIN MENU
Please select [1], [2], [3], [4], [5] or [ESC]
```

Press [1] key to select the auto iris control.

```
<<ADJUSTMENT OF IRIS OPEN & CLOSE>>
     PLEASE WAIT AROUND 10 SEC.
```

```
<<ADJUSTMENT OF IRIS OPEN & CLOSE>>
     PLEASE WAIT AROUND 10 SEC.
       DATA WRITEN INTO EEPROM
        ADJUSTMENT FINISHED
          PRESS ANY KEY !
```

Press any key, and the display changes as follows.

```
<< ADJUSTMENT IRIS >>
PLEASE WAIT AROUND 20 SEC.
```

※1

```
<< ADJUSTMENT IRIS >>
PLEASE WAIT AROUND 20 SEC.
ROUGH ADJUSTMENT     : XX TIMES
FINE ADJUSTMENT      : XX TIMES
      ADJUSTMENT FINISHED
        PRESS ANY KEY !
```

①

①

Press any key, and the display changes as follows.

```
<< ADJUSTMENT OF HALLCURVE >>
PLEASE WAIT AROUND 30 SEC.
NTSC
```

※2

```
<< ADJUSTMENT OF HALLCURVE >>
PLEASE WAIT AROUND 30 SEC.
NTSC
*
ADJUSTMENT POINT 0 1 2 3 4 · · · · A B C
```

```
<< ADJUSTMENT OF HALLCURVE >>
PLEASE WAIT AROUND 30 SEC.
NTSC
ADJUSTMENT POINT 0 1 2 3 4 · · · · A B C
       DATA WRITEN INTO EEPROM
        ADJUSTMENT FINISHED
          PRESS ANY KEY !
```

Press any key, and the display changes as follows.

```
      ADJUSTMENT FINISHED
        PRESS ANY KEY !
```

Press any key to return to ADJUSTMENT MENU.

Note 2: With some units the following parameter may not be displayed in the display marked ※1. This is normal; continue adjustment.
ROUGH ADJUSTMENT: XX TIMES

Note 3: The * mark flashes above the numerals and letters in sequence in the display marked ※2.

(2) Knee Adjustment (Fig. 2-18-1)

Note 1: Perform this adjustment, following the order described in "Caution" on the page before the previous page.

PURPOSE	·To determine the knee level.
INCOMPLETED PHENOMENON	·Colour in the very bright section is defective.
TEST POINT	·Video Out (AV OUT)
EQUIPMENT/JIG	·Oscilloscope (Waveform Monitor)
CONDITION	·Point at a gray scale chart.

PROCEDURE

ADJUSTMENT MENU

```
************************************************
*************** ADJUSTMENT *********************
************************************************
          [1]    AUTO IRIS CONTROL
          [2]    KNEE
          [3]    MATRIX
          [4]    WHITE BALANCE
          [5]    CHROMA GAIN
          [ESC]  RETURN TO MAIN MENU
Please select [1], [2], [3], [4], [5] or [ESC]
```

Press [2] key to select the knee.

```
**** KNEE ADJUSTMENT ****  STEP 1
 * THIS ADJUSTMENT PERFORM WHEN REPLACING
   IC1101 or IC1106 only.
 * IT NEED IRIS ADJUSTMENT HAVE PERFORMED
   COMPLETELY BEFORE.
     PERFORM THIS ADJUSTMENT *
 PLEASE POINT AT THE CHART AND
                    PRESS THE FOLLOWING KEY
         GO TO NEXT STEP   [ENTER]
         RETURN TO MENU    [ESC]
```

Press [ENTER] key to start the next step.

```
*** KNEE ADJUSTMENT ***  STEP 1
*** WAIT A MOMENT ***
```

②

②

```
**** KNEE ADJUSTMENT ****  STEP 2
SET LUMINANCE LEVEL TO
        100 (+/- 5) IRE OR 715 (+/- 35) mV
ROUGH ADJUSTMENT
[U]    UP
[D]    DOWN
FINE ADJUSTMENT
[Ctrl] + [U]    UP
[Ctrl] + [D]    DOWN
[ENTER]    DECISION
```

Press the [U] and [D] keys to set the amplitude level to around 715mVp-p.
Press the [Ctrl] key and hold it down, then press the [U] and [D] keys to adjust the amplitude level to 715mVp ± 35mVp-p.

Press [ENTER] key to start the next step.

```
**** KNEE ADJUSTMENT ****  STEP 3
ADJUST THE LUMINANCE LEVEL TO
        THE LEVEL WHITCH ADJUSTMENT STEP 2
ROUGH ADJUSTMENT
[U]    UP
[D]    DOWN
FINE ADJUSTMENT
[Ctrl] + [U]    UP
[Ctrl] + [D]    DOWN
[C]    CONFIRM THE LEVEL AT STEP 2
[ENTER]    DECISION
```

Press the [U] and [D] keys to bring the amplitude level near to the level in step 2.
Press the [Ctrl] key and hold it down, then press the [U] and [D] keys to match the amplitude level to that in step 2.

Press the [C] key. The level in step 2 can be checked.

```
**** KNEE ADJUSTMENT ****  STEP 3
HOW SHOW YOU THE LEVEL AT STEP 2.
RETURN TO BEFORE PICTURE  [C]
```

③

③

Press [ENTER] key, and the display changes as follows.

```
WRITING EEPROM NOW
*** KNEE ADJUSTMENT ***
END
PRESS ANY KEY
```

Press any key to return to ADJUSTMENT MENU.

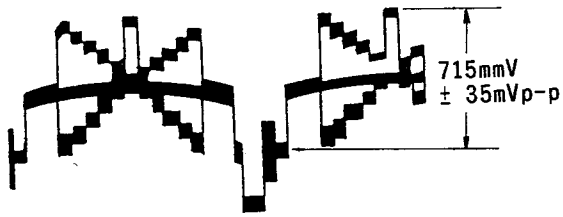


Fig. 2-8-1

(3) Matrix Adjustment (Fig. 2-18-2)

PURPOSE	To compensate for uneveness in the chroma signal.
INCOMPLETED PHENOMENON	Colour reproduction becomes defective.
TEST POINT	·Video Out (AV OUT)
EQUIPMENT/JIG	·Oscilloscope
CONDITION	·Point at a colour bar chart.

PROCEDURE

ADJUSTMENT MENU

```
**********************************************
*************** ADJUSTMENT *******************
**********************************************
          [1]    AUTO IRIS CONTROL
          [2]    KNEE
          [3]    MATRIX
          [4]    WHITE BALANCE
          [5]    CHROMA GAIN
          [ESC]  RETURN TO MAIN MENU
Please select [1], [2], [3], [4], [5] or [ESC]
```

Press [3] key to select the matrix.

```
      << ADJUSTMENT OF BLUE MATRIX >>
ROUGH ADJUSTMENT
[U]    UP
[D]    DOWN
FINE ADJUSTMENT
[Ctrl] + [U]    UP
[Ctrl] + [D]    DOWN
[ESC]    RETURN TO MENU
```

④

④

Press the [D] key to minimize the yellow (YEL) level. Press the [U] key so the ratio between yellow (YEL) and blue (BLU) levels is 6:7. Press the [Ctrl] key and hold it down, then press the [U] and [D] keys so the ratio between yellow (YEL) and blue (BLU) levels is 6:7.

Press [ENTER] key, and the display changes as follows.

```
DATA WRITING TO EEPROM
ADJUSTMENT FINISH
PRESS ANY KEY !
```

Press any key to return to ADJUSTMENT MENU.

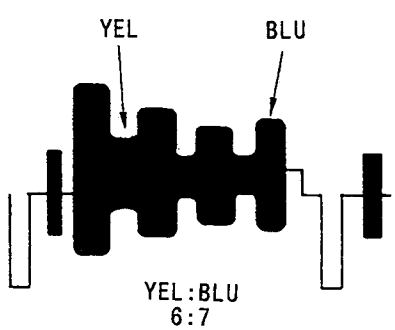


Fig. 2-18-2

(4) White Balance Adjustment

PURPOSE	To set white balance under the colour temperature which becomes a reference for the auto white balance circuit.
INCOMPLETED PHENOMENON	·Colour of the subject is different from that of the picture. ·A white subject is not seen as white.
TEST POINT	·Video Out (AV OUT)
EQUIPMENT/JIG	————
CONDITION	·Attach a C12 filter. ·Point at a gray scale chart (at wide-angle).

PROCEDURE

ADJUSTMENT MENU

```
**********************************************
*************** ADJUSTMENT *******************
**********************************************

          [1]   AUTO IRIS CONTROL
          [2]   KNEE
          [3]   MATRIX
          [4]   WHITE BALANCE
          [5]   CHROMA GAIN
          [ESC] RETURN TO MAIN MENU
Please select [1], [2], [3], [4], [5] or [ESC]
```

Press [4] key to select the white balance.

```
WHITE BALANCE ADJUSTMENT
    INPUT DATA OF OFFSET FOR R-B --> 00
```

Press [2] [C] to input the data.

Press [ENTER] key, and the display changes as follows.

⑤

⑤

```
WHITE BALANCE ADJUSTMENT
    INPUT DATA OF OFFSET FOR Mg-G --> 00
```

Press [1] [F] to input the data.

Press [ENTER] key, and the display changes as follows.

```
WHITE BALANCE ADJUSTMENT
        PLEASE WAIT A MOMENT
```

```
WHITE BALANCE ADJUSTMENT
  Adjustment completed.
  Completed EEPROM writing.
  PRESS ANY KEY
```

Press any key to return to ADJUSTMENT MENU.

(5) Chroma Gain Adjustment (Figs. 2-19, 2-20)

PURPOSE	To set the colour saturation under the reference colour temperature.
INCOMPLETED PHENOMENON	·Colour of the picture is denser than that of the subject. ·Colour of the picture is lighter than that of the subject.
TEST POINT	·Video Out (AV OUT)
EQUIPMENT/JIG	·Oscilloscope (Vectorscope)
CONDITION	·Attach a C12 filter. ·Point at a colour bar chart.

PROCEDURE

ADJUSTMENT MENU

```
**********************************************
*************** ADJUSTMENT *******************
**********************************************

          [1]    AUTO IRIS CONTROL
          [2]    KNEE
          [3]    MATRIX
          [4]    WHITE BALANCE
          [5]    CHROMA GAIN
          [ESC]  RETURN TO MAIN MENU

Please select [1], [2], [3], [4], [5] or [ESC]
```

Press [5] key to select the chroma gain.

```
<< ADJUSTMENT OF CHROMA GAIN >>

ROUGH ADJUSTMENT
[U]     CHROMA GAIN UP
[D]     CHROMA GAIN DOWN

FINE ADJUSTMENT
[Ctrl] + [U]     CHROMA GAIN UP
[Ctrl] + [D]     CHROMA GAIN DOWN

[ENTER]     RETURN TO MENU
```

WHEN USING AN OSCILLOSCOPE

Press the [U] and [D] keys to set the red level to around 400mVp-p.
Press the [Ctrl] button and hold it down, then press the [U] and [D] keys so the red level is 400mV ± 20mVp-p. (Fig. 2-19)

WHEN USING A VECTORSCOPE

Press the [U] and [D] keys to set the red vector to around 140% of the burst.
Press the [Ctrl] button and hold it down, then press the [U] and [D] keys so the red vector is 140% ± 5%. (Fig. 2-20)

Press [ENTER] key, and the display changes as follows.

```
DATA WRITING EEPROM

ADJUSTMENT FINISHED
PRESS ANY KEY !
```

Press any key to return to ADJUSTMENT MENU.

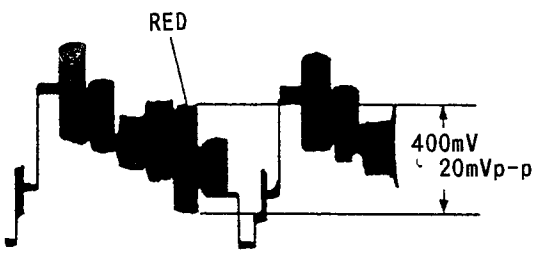


Fig. 2-19

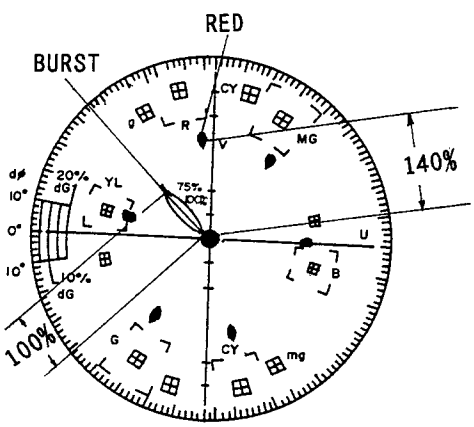


Fig. 2-20

2.7.6 Autofocus Adjustment Procedure

Note 1: Be sure to perform this adjustment after replacing or initializing the lens block, parts in the autofocus circuit and main circuit board (EEPROM).

Note 2: When an error message appears during adjustment, refer to "4. Error Messages".

1) Start MAP, referring to "2.7.2 How to Start the Adjustment Programme (MAP)".

2) Press [D] to select AUTO FOCUS. (Figs. 2-21, 2-22 AND 2-23.)

3) Select the number of the required adjustment.

Note 3: If [ESC] (escape) is pressed, the computer's display returns to Fig. 2-21 (MAIN MENU).

Note 4: To complete adjustment, press the [ESC] (escape) key twice to restore the MS-DOS screen and then turn off the camera/recorder and jig.

MAIN MENU

```
************************************************
********* MANUAL ADJUSTMENT PROGRAM ************
************************************************

          [A]   DATA INITIALIZE
          [B]   ELECTRIC VOLUME
          [C]   ADJUSTMENT
          [D]   AUTO FOCUS
          [E]   VCR ADJUSTMET
          [ESC] END

Please select [A], [B], [C], [D], [E] or [ESC]
```

Fig. 2-21

⬇

Press [D]

⬇

```
TOOL FOR ADJUSTING AUTO FOCUS SYSTEM
```

Fig. 2-22

⬇

AF ADJ. MENU

```
************************************************
************ AUTO FOCUS ADJUSTMENT *************
************************************************

     [1]   ADJUSTMENT OF ZOOM TRACE
     [2]   ADJUSTMENT OF AF NOISE LEVEL
     [ESC] RETURN TO MENU

       Please select [1], [2] or [ESC]
```

Fig. 2-23

(1) Zoom Trace Adjustment

PURPOSE	·To set the out-of-focus correction level during zooming.
INCOMPLETED PHENOMENON	·Focus is lost during zooming.
EQUIPMENT/JIG	·Colour Video Monitor ·Backfocus Chart
TEST POINT	·Video Out (AV OUT)
CONDITION	·Point at the backfocus chart, 1500±5 mm away from the lens surface. ·Light the chart with 200-400 lux.

Note 1: Measure the distance between the chart and lens surface precisely.

Note 2: Place the chart as parallel as possible to the lens surface.

Note 3: The backfocus chart should always be at the centre of the monitor screen when the zoom is set to the wide-angle and telephoto ends.

Note 4: The zoom trace adjustment procedure is completed within 2 minutes after it is selected.

Note 5: Do not place any obstruction between the lens and chart during adjustment.

PROCEDURE

AF ADJ. MENU

```
************************************************
************ AUTO FOCUS ADJUSTMENT *************
************************************************

     [1]   ADJUSTMENT OF ZOOM TRACE
     [2]   ADJUSTMENT OF AF NOISE LEVEL
     [ESC] RETURN TO MENU

       Please select [1], [2] or [ESC]
```

⬇

Press [1] key to select ADJUSTMENT OF ZOOM TRACE.

⬇

```
ADJUSTMENT OF BACKFOCUS STARTED
```

⬇

```
ADJUSTMENT OF BACKFOCUS STARTED
     AF ADJUSTMENT STARTED
```

⬇

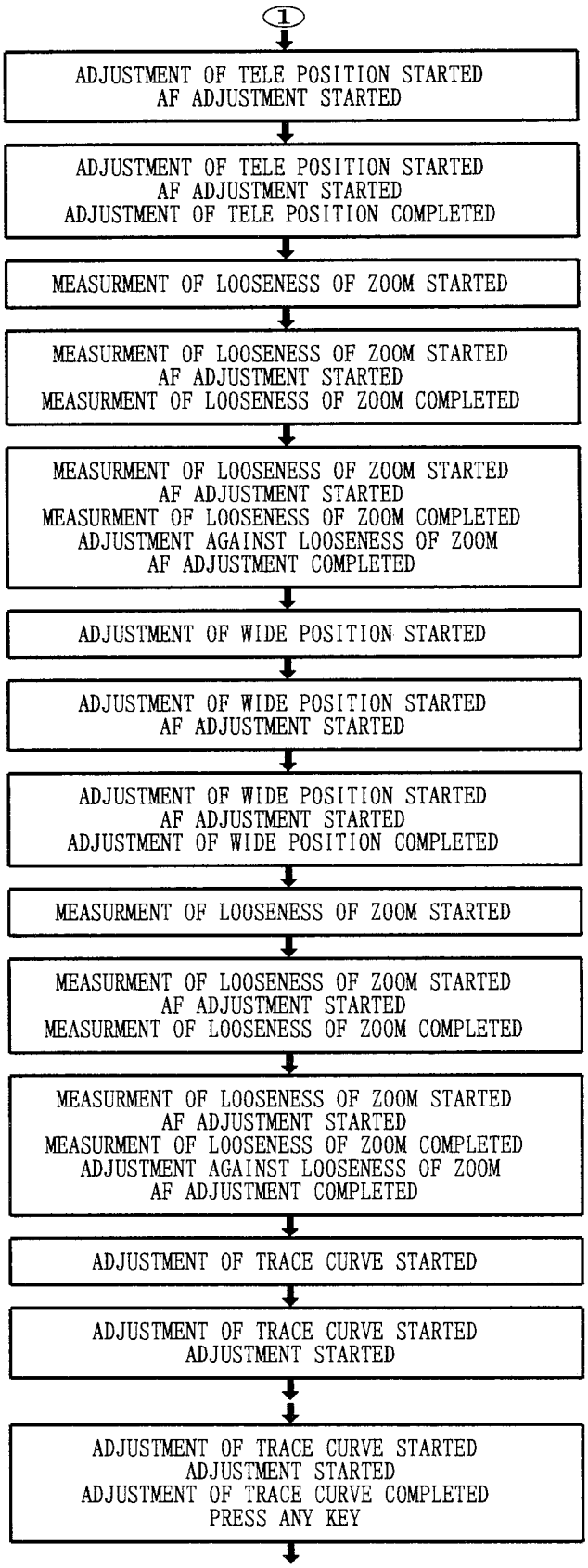
```
ADJUSTMENT OF BACK FOCUS STARTED
     AF ADJUSTMENT STARTED
ADJUSTMENT OF BACK FOCUS COMPLETED
```

⬇

```
ADJUSTMENT OF TELE POSITION STARTED
```

⬇

(1)



Press any key to return to AF ADJ. MENU.

Turn the power off and then on again.

(2) AF Noise Level Adjustment

PURPOSE	·To set the noise level.
INCOMPLETED PHENOMENON	·It takes time until a subject is brought into focus. ·Correct focus is not obtained.
EQUIPMENT/JIG	·Colour Video Monitor
TEST POINT	·Video Out (AV OUT)
CONDITION	·Set the focus to AUTO. ·Point at a light box without a chart inserted at a distance of up to 10cm.

Note 1: Place the light box as parallel as possible to the lens surface.
Note 2: The AF noise level adjustment procedure will be completed within a minute after it is selected.

PROCEDURE

AF ADJ. MENU

```
**********************************************
********** AUTO FOCUS ADJUSTMENT *************
**********************************************
     [1]   ADJUSTMENT OF ZOOM TRACE
     [2]   ADJUSTMENT OF AF NOISE LEVEL
     [ESC] RETURN TO MENU
       Please select [1], [2] or [ESC]
```

Press [2] key to select ADJUSTMENT OF AF NOISE LEVEL.

```
MEASURMENT OF NOISE LEVEL STARTED
        PLEASE WAIT MOMENT
```

```
MEASURMENT OF NOISE LEVEL STARTED
        PLEASE WAIT MOMENT
PRESS ANY KEY    NOISE LEVEL COMPLETED
```

Press any key to return to AF ADJ. MENU.

Turn the power off and then on again.

2.8 ELECTRONIC VIEWFINDER (EVF) ADJUSTMENT

(1) Deflection Yoke Position Adjustment (Fig. 2-51)

PURPOSE	This adjustment procedure eliminates picture tilt in the EVF display.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
·EVF Display		·Aim the resolution chart.	·Deflection Yoke	

1) Loosen the deflection yoke nut.
2) Turn the deflection yoke so that the EVF picture (chart) is horizontal, matching the edges of the CRT.

Note: After adjustment is completed, tighten the deflection yoke nut.

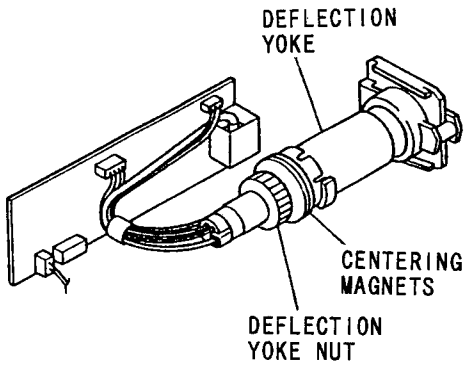


Fig.2-51

(2) EVF Centring Adjustment (Fig. 2-51)

PURPOSE	This adjustment centres the image observed by the camera in the EVF display.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
·EVF Display		·Aim the resolution chart.	·CENTRING MAGNETS	

1) Remove the locking paint from the centring magnet.
2) Adjust the centring magnets until the centre of the picture viewed by the camera is positioned in the centre of the EVF display.

(3) EVF Vertical Size Adjustment (Fig. 2-52)

PURPOSE	This adjustment determines the vertical size of the image appearing in the EVF display			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
·EVF Display		·Aim the resolution chart.	·RT2003 EVF (V.SIZE)	

1) Adjust RT2003 so that the top and bottom edges of the chart match the top and bottom edges of the CRT.

(4) EVF Brightness Adjustment (Fig. 2-52)

PURPOSE	This adjustment sets the brightness of the picture in the EVF display.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
·EVF Display		·Aim the resolution chart.	·RT2002 EVF (BRIGHT)	

1) Adjust RT2002 to optimize the EVF picture.

(5) EVF Focus Adjustment (Fig. 2-52)

PURPOSE	This control adjusts for optimum focus of the electronic viewfinder picture.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
·EVF Display		·Aim the resolution chart.	·RT2001 EVF (FOCUS)	

1) Adjust RT2001 so that the EVF picture is clear.

ADJUSTMENT PARTS LOCATION

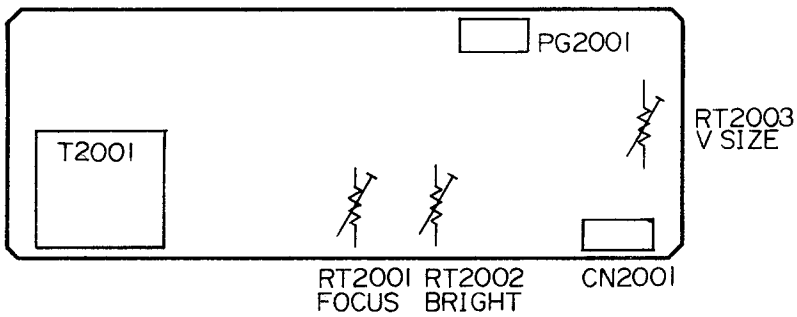


Fig. 2-52 Electronic Viewfinder (EVF) Circuit Board [Parts Side]

3. VTR SECTION ADJUSTMENT

3.1 CIRCUIT BOARD LOCATIONS

1. Main Circuit Board
2. Sensor Circuit Board
3. T/W SW Unit
4. REC SW/Batt. Circuit Board

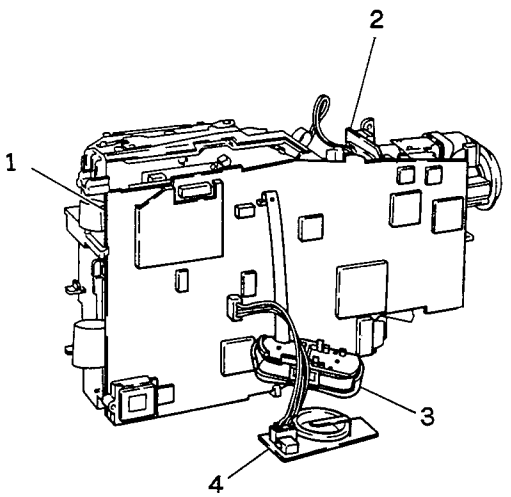


Fig. 3-1

3.2 TEST EQUIPMENT AND ALIGNMENT TAPES NECESSARY FOR ADJUSTMENT

- Test Equipment
  Oscilloscope (dual trace)
  Digital Voltmeter (DVM)
  Frequency Counter
  Millivoltmeter
  Colour Video Monitor
  Colour Bar Generator
  C/R Oscillator
- Alignment Tape, etc.
  Adjustment Floppy Disk
  Personal Computer
  Personal Computer 9-pin or
  25-pin (RS232C) Cable
  DSP-R Jig
  DSP AV Output Cable
  Alignment Tape (20HSC-3)
  Blank Tape
  ATF-R Jig
  DC Power Supply (DC 0~7V/3A)
  DC Power Supply (DC 5V/1A)

3.3 ADJUSTMENT CONDITION

1) Check that the camera section has been adjusted correctly before adjusting the VTR section
2) Connect this unit, a power supply and a colour video monitor as shown in Fig. 1-1.
3) Use the 10:1 probe of the oscilloscope when other not specified.
4) When "Record mode" is specified, load a blank tape and set the 8mm video camera/recorder to the record mode by the following procedure.
   ① Set the CAMERA/OFF/VIDEO switch to the CAMERA position.
   ② Press the REC START/STOP button on the unit (or REC START/STOP button on the remote control).
5) Before adjusting the resistors marked with asterisks (*) in the following text, remove the corresponding laser trimming resistors to replace them with the specified semi-variable resistors.
6) Before unsoldering laser trimming resistors be sure to confirm each adjustment value. Remove only the resistors used in the adjustment items that should be adjusted.

3.4 PRESET POSITIONS OF SWITCHES AND CONTROLS DURING ADJUSTMENT

- CAMERA/OFF/VIDEO switch ..... "VIDEO" position
- TITLE ..... Not Display mode

The video and audio signals can be input to a model without the AV input function in the following two ways.

Note: The following methods are used for adjustment and checking. Do not use them for any purposes other than adjustment or checking.

- Modify the AV input cable.
  Change the connection of pin 13 of the AV input cable from ground to pin 2 (DC5V). (After checking that pin 13 and ground are not connected, connot pin 13 to pin 2 (DC5V)).

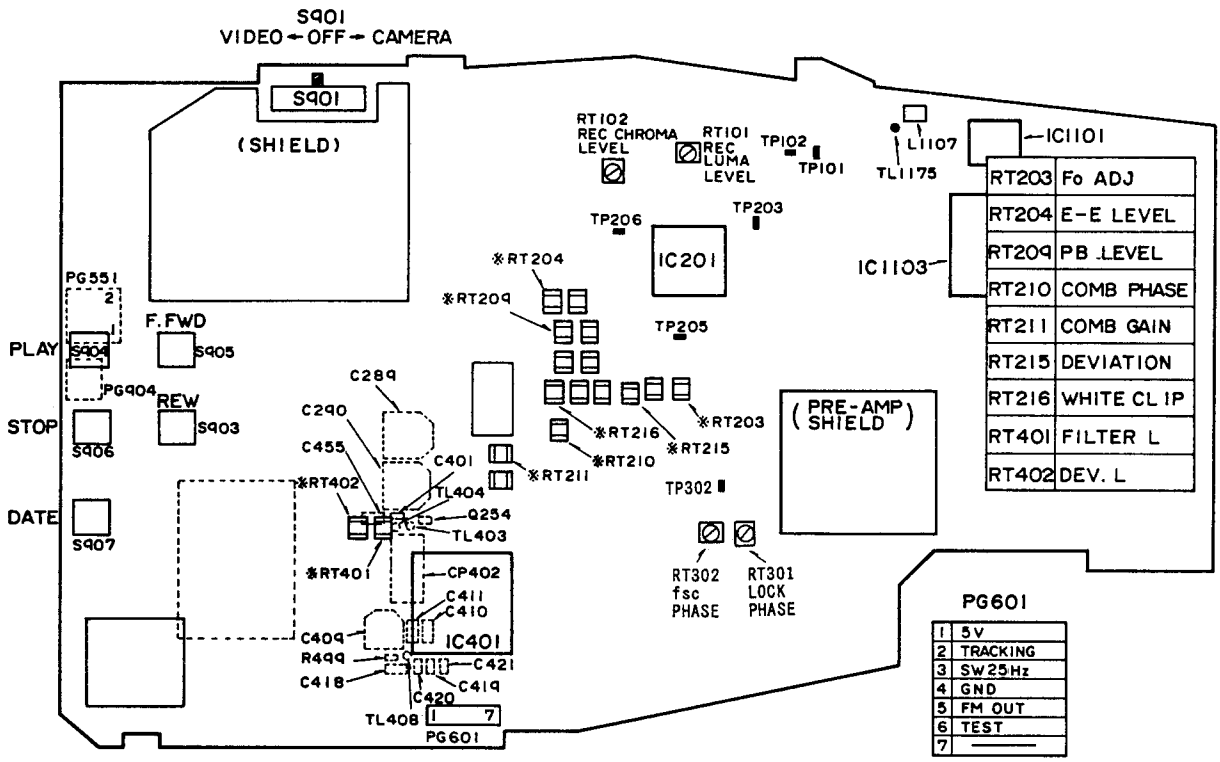
3.5 ADJUSTMENT COMPONENTS LOCATIONS

Note 1 : Before adjusting the resistors marked with asterisks shown in the adjustment parts location diagram, remove the laser trimming resistors to replace them with semi-variable resistors (shown in Table 3-1).

Note 2 : Adjust (turn) the soldered semi-variable resistor within the range shown in Fig. 3-3.

Table 3-1

ADJUST POINT	SEMI-VARIABLE RESISTOR (Ω)	C.B.A	NAME OF ADJUSTMENT
RT203	10 k	MAIN	Fo ADJ
RT204	10 k	MAIN	E-E LEVEL
RT209	10 k	MAIN	PB LEVEL
RT210	470	MAIN	COMB PHASE
RT211	4.7 k	MAIN	COMB GAIN
RT215	10 k	MAIN	DEVIATION
RT216	22 k	MAIN	WHITE CLIP
RT401	47 K	MAIN	FILTER L
RT402	47 k	MAIN	DEV. L



Note: Variable resistors marked ※ are leaser trimming resistor.

Fig. 3-2 Main (MAIN) Circuit Board

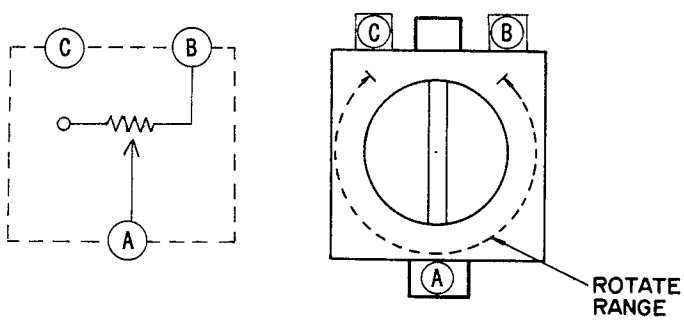


Fig. 3-3

3.6 ADJUSTMENTS AFTER REPLACING MAJOR COMPONENTS IN THE VTR SECTION

After replacing major components, perform adjustments, referring to the table below.
The following table shows the minimum adjustments required after major components are placed.
The table below may not apply when several components are replaced, depending on the symptom of the defect.

Note: After replacing the parts, check each adjustment. If you find the items necessary to be adjusted, remove the corresponding laser trimming resistors and replace them with variable resistors for adjustment.

ITEM No.	NAME OF ADJUSTMENT	NAME OF MAJOR COMPONENTS						
		MAIN C.B.A	CYLINDER	IC901	IC201	IC202	IC401	IC301
	SYSTEM CONTROL/SERVO CIRCUITS ADJUSTMENT							
(1)	Power Shut Off Level Adjustment	●		●				
(2)	Head Switching Point Adjustment	●	●	●				
	LUMINANCE/CHROMA CIRCUIT ADJUSTMENT							
(1)	Comb Filter Adjustment				●	●		
(2)	E-E Video Signal Levl Adjustment				●			
(3)	White Clip Adjustment				●			
(4)	Carrier Frequency Adjustment				●			
(5)	Deviation Adjustment				●			
(6)	Record Luminance/Chroma level Adjustment				●			
(7)	Playback Luminance Level Adjustment				●			
(8)	Colour Alignment Adjustment				●			●
	AUDIO CIRCUIT ADJUSTMENT							
(1)	Band Pass Filter (BPF) Adjustment						●	
(2)	Deviation Adjustment						●	

3.7 SYSTEM CONTROL/SERVO CIRCUIT ADJUSTMENT

Note 1: System control/servo adjustment also needs a personal computer. Connect the camera/recorder, jigs, power supply, etc. in the same way as in Digital Adjustment.

Note 2: Be sure to perform this adjustment after replacing or initializing the EEPROM and main circuit board (EEPROM).

Note 3: When an error message appears during adjustment, refer to "4. Error Messages".

1) Start the MAP, referring to "2.7.2 How to Start the Adjustment Programme (MAP)"

2) Press [E] to select VCR ADJUSTMENT. (Figs. 3-4, 3-5)

3) Select the number of the required adjustment.

Note 3: If [ESC] (escape) is pressed, the computer's display returns to Fig. 3-4 (MAIN MENU).

Note 4: To complete adjustment, press the [ESC] (escape) key twice to restore the MS-DOS screen and then turn off the camera/recorder and jig.

MAIN MENU

```
**********************************************
********* MANUAL ADJUSTMENT PROGRAM ***********
**********************************************
          [A]   DATA INITIALIZE
          [B]   ELECTRIC VOLUME
          [C]   ADJUSTMENT
          [D]   AUTO FOCUS
          [E]   VCR ADJUSTMET
          [ESC] END
Please select [A], [B], [C], [D], [E] or [ESC]
```

Fig. 3-4

⬇

Press [E]

⬇

VTR ADJ. MENU

```
**********************************************
************** VCR ADJUSTMENT ****************
**********************************************
     [1]   ADJUSTMENT OF ODC
     [2]   ADJUSTMENT OF SWITCHING POINT
     [ESC] RETURN TO MAIN MENU
       Please select [1], [2] or [ESC]
```

Fig. 3-5

(1) Power Shut Off Level (ODC : Over Discharge) Adjustment

PURPOSE	·To set the minimum voltage required to operate the camera/recorder.
INCOMPLETED PHENOMENON	·The usable time of the battery becomes short. ·The camera/recorder deos not operate normally.
TEST POINT	·PG551-2 MAIN ·PG551-1 (GND) MAIN
EQUIPMENT/JIG	·DC Power Supply (0 ~ 7V) ·DVM ·Blank tape
CONDITION	·Load the blank tape. ·Connect the DC power supply to PG551. ·Set the voltage of PG551-1 to 5.65V ± 0.05V.

PROCEDURE

VTR ADJ. MENU

```
**********************************************
********** VCR ADJUSTMENT **********
**********************************************
    [1]    ADJUSTMENT OF ODC
    [2]    ADJUSTMENT OF SWITCHING POINT
    [ESC]  RETURN TO MAIN MENU
      Please select [1], [2] or [ESC]
```

Press [1] key to select the adjustment of ODC.

```
<< SET UP OF ODC ADJUSTMENT STARTED >>
SET POWER SOURCE AT 5.65 (+/- 0.05) V.
   START ADJUSTING.  PRESS ANY KEY.
```

Press any key, and the display changes as follows.

```
<< SETUP OF ODC ADJUSTMENT COMPLETED >>
<< ODC ADJUSTMENT STARTED >>
<< ODC ADJUSTMENT COMPLETED >>
PRESS ANY KEY
```

Press any key to return to VTR ADJ. MENU.

(2) Head Switching Point Adjustment

PURPOSE	·To set the switching point of the video heads during playback.
INCOMPLETED PHENOMENON	·Vertical jitter occurs. ·Switching noise appears across the bottom of the monitor screen.
TEST POINT	———
EQUIPMENT/JIG	·Alignment Tape
CONDITION	·Load the alignment tape.

PROCEDURE

VTR ADJ. MENU

```
**********************************************
********** VCR ADJUSTMENT **********
**********************************************
    [1]    ADJUSTMENT OF ODC
    [2]    ADJUSTMENT OF SWITCHING POINT
    [ESC]  RETURN TO MAIN MENU
      Please select [1], [2] or [ESC]
```

Press [2] key to select the adjustment of SWITCHING POINT.

```
<< SET UP OF SW POINT ADJUSTMENT STARTED >>
<< SETUP OF SW POINT ADJUSTMENT COMPLETED >>
```

```
<< SW POINT ADJUSTMENT STARTED >>
```

```
<< SW POINT ADJUSTMENT DATA CHECKING >>
<< ADJUSTMENT DATA WRITING STARTED >>
<< ADJUSTMENT DATA WRITING COMPLETED >>
PRESS ANY KEY
```

Press any key to return to VTR ADJ. MENU.

3.8 LUMINANCE/CHROMA CIRCUIT ADJUSTMENT

(1) Comb Filter Adjustment (Figs. 3-2, 3-6)

PURPOSE	• To set the characteristic of the comb filter.			
INCOMPLETED PHENOMENON	• Jamming occurs at the edges. • The chroma S/N deteriorates.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•Oscilloscope •Colour Bar Generater	•TP203 MAIN •Pre-amp Shield (GND) •Video Out (AV OUT)	•Input the colour bar signal. •STOP mode	*RT211 MAIN (COMB GAIN) *RT210 MAIN (COMB PHASE)	Minimize the residual chroma components.

1) Connect the oscilloscope to TP203.
2) Trigger the oscillosccope at video signal.
3) Adjust RT210 and RT211 to minimize the residual chroma components.

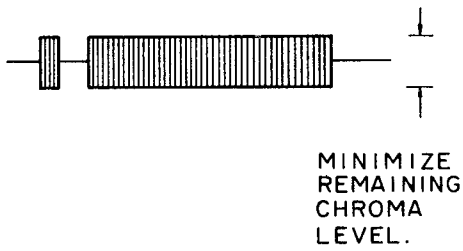


Fig. 3-6

(2) E-E Video Siganl Level Adjustment (Figs. 3-2, 3-7)

PURPOSE	• To set the video output level in the E-E mode.			
INCOMPLETED PHENOMENON	• The picture becomes dark or whitish in the E-E mode.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•Oscilloscope •Colour Bar Generator	•Video Out (AV OUT) •Pre-amp Shield (GND)	•Input the colour bar signal. •Stop mode	*RT204 MAIN (E-E LEVEL)	•1V ± 0.02Vp-p

1) Connect the oscilloscope to video out.
2) Adjust RT204 for 1V ± 0.02V.

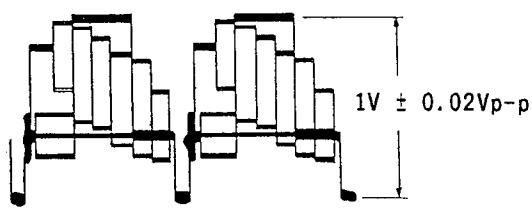


Fig. 3-7

(3) White Clip Adjustment (Figs. 3-2, 3-8)

PURPOSE	• To set the white clip level.			
INCOMPLETED PHENOMENON				
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•Oscilloscope •Colour Bar Generator	•TP205 MAIN •Pre-amp Shield (GND) •Video Out (AV OUT)	•Input the colour bar signal. •Stop mode	*RT216 MAIN (WHITE CLIP)	•300mV ± 5mVp-p

1) Connect the oscilloscope to TP205.
2) Trigger the oscilloscope at video signal.
3) Adjust RT216 for 300mV ± 5mVp-p

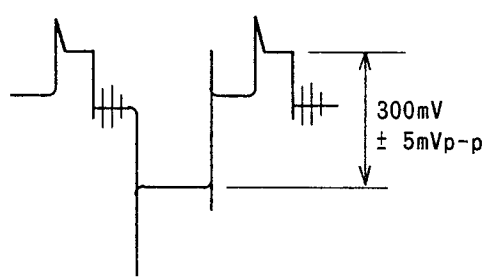


Fig. 3-8

(4) Carrier Frequency Adjustment (Figs. 3-2, 3-9)

PURPOSE	• To set the modulation frequency at the sync tip of the FM modulator to the specified value.			
INCOMPLETED PHENOMENON	• Black and white are inverted in the picture.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•Oscilloscope •Colour Bar Generator	•TP206 MAIN •Pre-amp Shield (GND)	•Input the white (100%) signal.	*RT203 MAIN (Fo ADJ)	•238ns ± 3ns

1) Connect the oscilloscope to TP206.
2) Trigger the oscilloscope internally.
3) Adjust RT203 so the period of the widest pulse is 238ns ± 3ns.

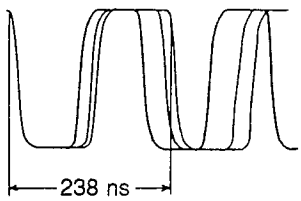


Fig. 3-9

(5) Deviation Adjustment (Figs. 3-2, 3-10)

PURPOSE	• To set the modulation frequency at the white peak of the FM modulator to the specified value.			
INCOMPLETED PHENOMENON	• The picture becomes dark or whitish during recording and playback.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•Oscilloscope •Colour Bar Generator	•TP206 MAIN •Pre-amp Shield (GND)	•Input the white (100%) signal.	*RT215 MAIN (DEVIATION)	•185ns ± 2ns

1) Connect the oscilloscope to TP206.
2) Trigger the oscilloscope internally.
3) Adjust RT215 so the period of the narrowest pulse is 185ns ± 2ns.

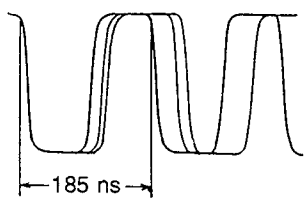


Fig. 3-10

(6) Record Luminance/Chroma Level Adjustment (Figs. 3-2, 3-11, 3-12)

PURPOSE	• To set the luminance and chroma signals to the specified values.			
INCOMPLETED PHENOMENON	• The luminance and chroma S/Ns diteriorate. • Cross-beats appear on the monitor screen. • Black and white are inverted in picture.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•Oscilloscope •Colour Bar Generator •ATF-R Jig (SW3:ON)	•TP101 (REC LUMA) MAIN •TP102 MAIN (REC CHROMA) •Pre-amp Shield (GND) •Video Out (AV IN/OUT)	•Input the colour bar signal. •Connect the ATF-R jig to PG601. •No tape required.	•RT101 MAIN (REC LUMA LEVEL) •RT102 MAIN (REC CHROMA LEVEL)	•230mV ± 10mVp-p •150mV ± 5mVp-p

Note: Be sure not to load a tape.

1) Connect the ATF-R jig to PG601 and turn the power off.
2) Press the REW button and hold it, then set the POWER switch to CAMERA position.
3) Set the unit to the loading state.
4) Connect the oscilloscope to TP101.
5) Trigger the oscilloscope at video signal.
6) Adjust RT101 so that the sync tip section in record luminance signal is 270mV ± 10mVp-p. (Fig. 3-11)

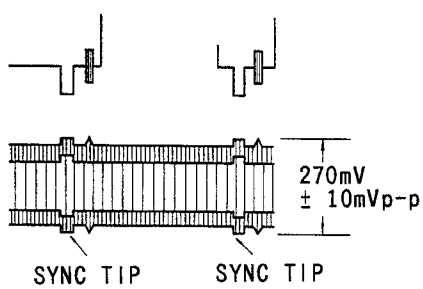


Fig. 3-11

7) Connect the oscilloscope to TP102.
8) Adjust RT102 so that the burst section in record chroma signal is 150mV ± 5mVp-p. (Fig. 3-12)

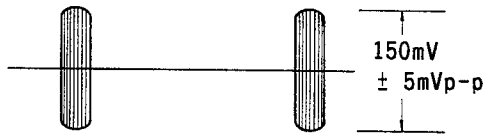


Fig. 3-12

(7) Playback Luminance Level Adjustment (Figs. 3-2, 3-13)

PURPOSE	• To set the luminance playback level to the specified value.			
INCOMPLETED PHENOMENON	• The picture becomes dark or whitish during playback.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•Oscilloscope •Alignment Tape	•Video Out (AV OUT) •Pre-amp Shield (GND)	•Playback the alignment tape.	*RT209 MAIN (PB LEVEL)	•1V ± 0.02Vp-p

1) Connect the oscilloscope to video out.
2) Adjust RT209 for 1V ± 0.02V.

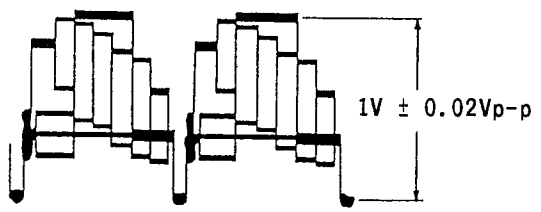


Fig. 3-13

(8) Colour Alignment Adjustment (Figs. 3-2, 3-14)

PURPOSE	•To set the tint in the colour alignment circuit.			
INCOMPLETED PHENOMENON	•No colour appears during trick play or colour reproduction becomes defective.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•Vectorscope •Alignment Tape •ATF-R Jig	•TP302 MAIN •Video Out (A/V OUT) •Pre-amp Shield (GND)	•Playback the alignment tape.	•RT301 MAIN (LOCK PHASE) •RT302 MAIN (fsc PHASE)	

1) Connect a vectorscope terminated with 75 ohms to the video output (AV OUT).
2) Connect the ATF-R jig to PG601 and turn the power off.
3) Press the FF button and hold it, then set the POWER switch to the VIDEO position so the unit enters the test mode (used exclusively for colour alignment adjustment).
4) Press the PLAY button and playback the alignment tape.
5) Supply power (5V DC) to TP302 via a 1kΩ resistor.
6) Check the YL chroma phase.
7) Press the PLAY button.
8) Adjust RT302 so the VL chroma phase is aligned (± 10 deg.) before and after the PLAY button is pressed.

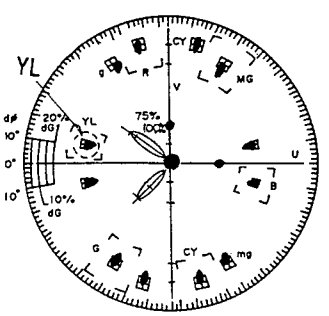


Fig. 3-14

9) Press the PLAY button.
10) Connect TP302 to ground via a 1kΩ resistor.
11) Check the YL chroma phase.
12) Press the PLAY button.
13) Adjust RT301 so the YL chorma phase is aligned (± 10 deg.) before and after the PLAY button is pressed.
14) Perform steps 5) - 13) again.

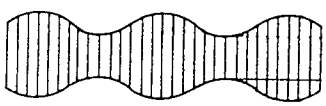
Note: When the PLAY button is pressed after the unit is set to the test mode, the unit enters the normal play mode. When the PLAY button is pressed again, the unit enters the colour alignment adjustment mode. Each time the PLAY button is pressed, the unit alternates between the normal play mode and the colour alignment adjustment mode.

3.9 AUDIO CIRCUIT ADJUSTMENT

(1) Band Pass Filter (BPF) Adjustment (Figs. 3-2, 3-15, 3-16)

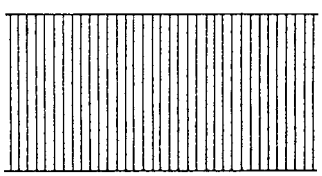
PURPOSE	· To set the bandpass frequency of the BPF.			
INCOMPLETED PHENOMENON	· No audio output.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
·Oscilloscope	·TL403 MAIN ·Audio GND (AV IN/OUT)	·Playback the Alignment Tape	*RT401 MAIN (FILTER L)	

1) Connect the oscilloscope to TL403.
2) Trigger the oscilloscope at SW25.
3) Adjust RT401 so the waveform is as shown in Figs. 3-15 and 3-16.



BAD

Fig. 3-15



GOOD

Fig. 3-16

(2) Deviation Adjustment (Fig. 3-2)

PURPOSE	·Set the audio output level.			
INCOMPLETED PHENOMENON	·Audio levels are different.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
·Millivoltmeter	·TL408 MAIN ·Audio GND (AV IN/OUT)	·Playback the Alignment Tape.	*RT402 MAIN (DEV. L)	-15dBs ± 0.5dBs (138mVrms ± 8mVrms)

1) Connect the millivoltmeter to TL408.
2) Adjust RT402 for -15dBs ± 0.5dBs (138mVrms ± 8mVrms).

4. ERROR MESSAGES

4.1 Error Messages in Camera Electric Volume and Digital Adjustments

Eerror Message	*Countermeasure*
ERROR OCCURRED. IRIS TROUBLE PRESS ANY KEY !	• Check whether or not power is supplied. • Check the values of the iris drive circuit. • Defective soldering, damage to pattern, etc. in the above circuit • Check the iris block and replace it if necessary.
ERROR OCCURRED ON daX ADJUSTMENT PRESS ANY KEY !	• Check the values in the hall amp circuit. • Defective soldering, damage to pattern, etc. in the above circuit.
D RANGE OVER. ERROR ON daX ADJUSTMENT PRESS ANY KEY !	• Check the values in the hall amp circuit. • Defective soldering, damage to pattern, etc. in the above circuit.
ERROR OCCURRED ERROR ON da0 and da1 ADJUSTMENT PRESS ANY KEY !	• Check the values in the hall amp circuit and its peripheral circuits. • Defective soldering, damage to pattern, etc. in the above circuits.
FILE NOT FOUND !!!! PRESS ANY KEY !	• The adjustment programme (file) cannot be found. • Check the adjustment floppy disk and replace it if necessary.
FILE OPEN ERROR !!!! PRESS ANY KEY	• The adjustment programme (file) does not start. • Check the adjustment floppy disk and replace it if necessary.
ERROR OCCURRED ON C DUTY ADJUSTMENT PRESS ANY KEY	• Check the values of the iris drive circuit. • Defective soldering, damage to pattern, etc. in the above circuit.
ERROR OCCURRED ON FDET ADJUSTMENT PRESS ANY KEY !	• Supply power again and re-adjust. • Check the values in the hall amp circuit. • Defective soldering, damage to pattern, etc. in the above circuit.
ERROR OCCURRED ZOOM DOES NOT WORK PRESS ANY KEY	• Supply power again and re-adjust.
TOO BRIGHT PRESS ANY KEY !	• The subject is too bright. • Move the camera further away from the light box.
TOO DARK PRESS ANY KEY !	• The subject is too dark. • Check the light box. • Move the camera closer to the light box.
D RANGE OVER ERROR ON HALL AMP IRIS CANNOT OPEN ANY MORE PRESS ANY KEY !	• Supply power again and re-adjust. • The subject is too dark. • Check the light box. • Move the camera closer to the light box. • Check the values in the hall amp circuit. • Defective soldering, damage to pattern, etc. in the above circuit.

Eerror Message	*Countermeasure*
STAURATION ERROR. TOO BRIGHT PRESS ANY KEY !	• The subject is too bright. • Move the camera further away from the light box.
CAN'T ADJUSTMENT WHITE BALANCE PLEASSE RETRY PRESS ANY KEY	• The subject is too bright or too dark. • Check the light box. • Move the camera closer to or away from the light box. • Supply power again and re-adjust.

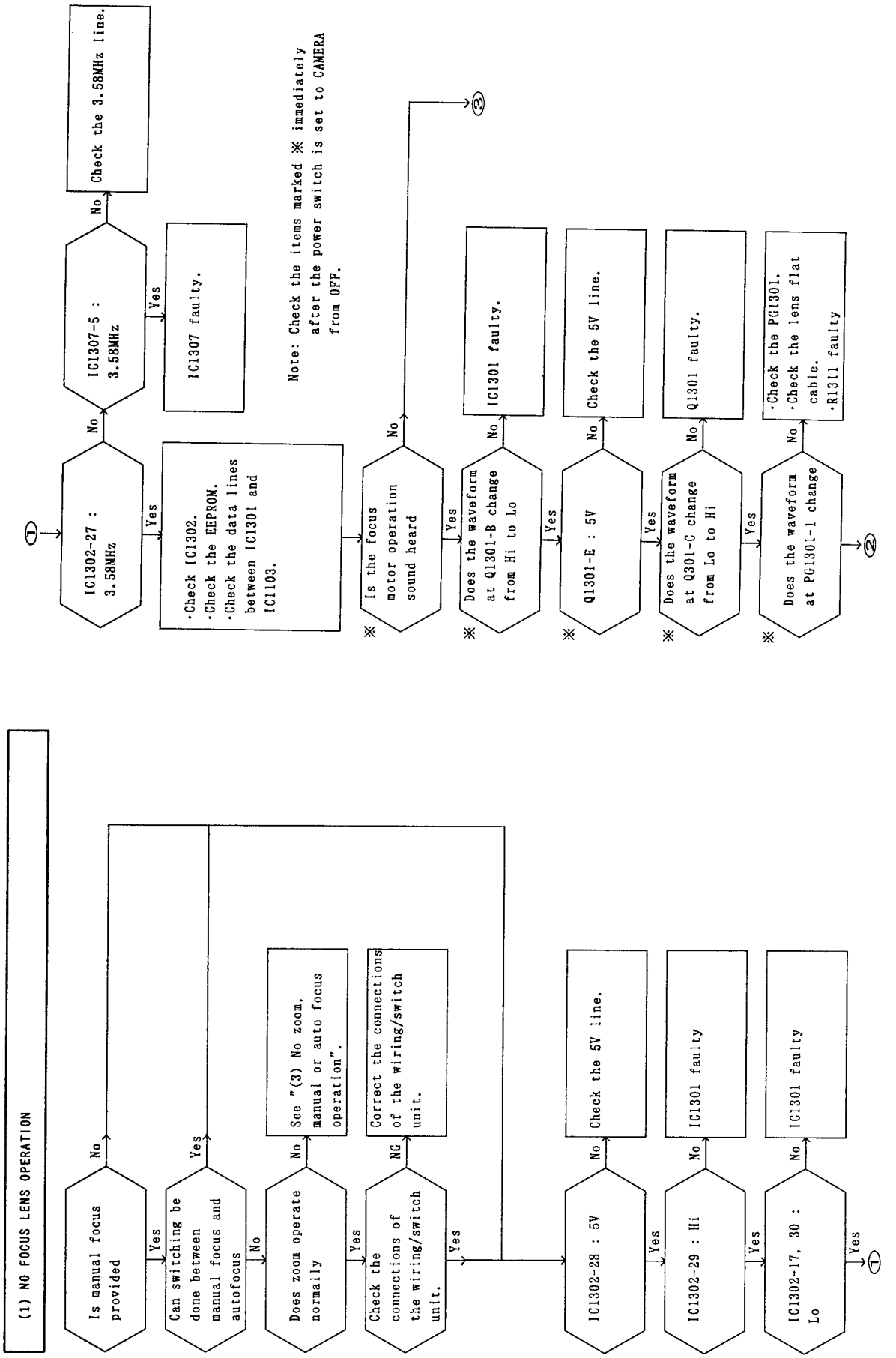
4.2 Error Messages in Autofocus and Electronic Stabilizer Adjustments

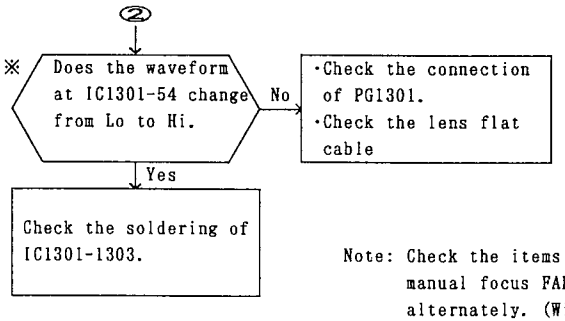
Eerror Message	*Countermeasure*
DATA INITIALIZE ERROR	• Error in communications between the DSP uP and autofocus uP. • Check the connections between the DSP uP and autofocus uP.
Error : AFA SETUP File nothing	• The autofocus adjustment programme cannot be found. • Check the adjustment floppy disk and replace it if necessary.
TIME OUT ERROR ON AF STEP	• If this error message appears even when the adjustment is performed 2 or 3 times, the autofocus circuit system is defective. • Refer to (1) of TROUBLESHOOTING OF AUTOFOCUS.
TIME OUT ERROR ON ZOOM	• If this error message appears even when the adjustment is performed 2 or 3 times, the autofocus circuit system is defective. • Refer to (2) of TROUBLESHOOTING OF AUTOFOCUS.
CAN'T COMPLET AF ADJUSTMENT	• If this error message appears even when the adjustment is performed 2 or 3 times, the autofocus circuit system is defective. • Refer to (2) of TROUBLESHOOTING OF AUTOFOCUS.
TIME OUT ERROR ON AF ADJUSTMENT	• If this error message appears even when the adjustment is performed 2 or 3 times, the autofocus circuit system is defective. • Refer to (2) of TROUBLESHOOTING OF AUTOFOCUS.
AF LIMIT OVER	• If this error message appears even when the adjustment is performed 2 or 3 times, the autofocus circuit system is defective. • Refer to (2) of TROUBLESHOOTING OF AUTOFOCUS.
OUT OF RENGE	• Error in communications between the DSP uP and autofocus uP. • Check the connections between the DSP uP and autofocus uP. • The electronic variable resistor adjustment or digital adjustment is incorrect.
CANNOT OPEN THE FILE PRESS ANY KEY	• The EIS adjustment programme does not start. • Check the adjustment floppy disk and replace it if necessary.

4.3 Error Messages in VTR Adjustment

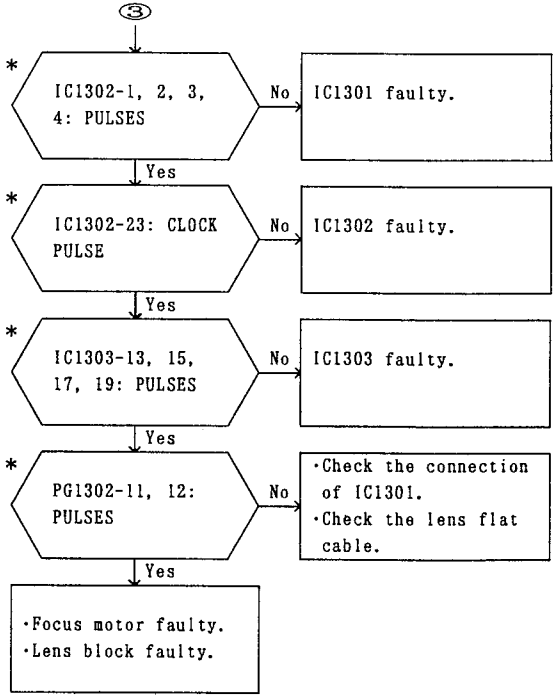
Eerror Message	*Countermeasure*
Error : SWP_TEST.DAT file nothing !	• The adjustment programme cannot be found. • Check the adjustment floppy disk and replace it if necessary.
ERROR : INVALID MODEL PRESS ANY KEY	• A wrong model has been selected. • The adjustment programme cannot be found. • Check the adjustment floppy disk and replace it if necessary.
THIS MODEL IS NOT NEED THE ADJUSTMENT PRESS ANY KEY	• A wrong model has been selected. • A product that needs analog adjustment is connected.
ADJUSTMENT INCOMPLETED PRESS ANY KEY	• The value set by adjustment defective. • Re-adjust. • Check cylinder. • Check the alignment tape. • Check whether or not the usual operation is done correctly
RETRY ADJUSTING. PRESS ANY KEY	• Supply power again and re-adjust.
CAMERA IS NOT READY	• Check whether or not power is supplied.
ERRER OCCURRED CAN'T PLAY BACK PRESS ANY KEY	• Not playback video. • Refer to (1) of TROUBLESHOOTING OF VTR.
ERROR OCCURRED NO V.SYNC FOURD	• Vertical sync loss. • Refer to (2) of TROUBLESHOOTING OF VTR.
INVALID MODEL PRESS ANY KEY	• A wrong model has been selected. • The adjustment programme cannot be found. • Check the adjustment floppy disk and replace it if necessary.
ERROR OCCURRED CAN'T RECORD PRESS ANY KEY	• No video recording. • Refer to (3) of TROUBLESHOOTING OF VTR.

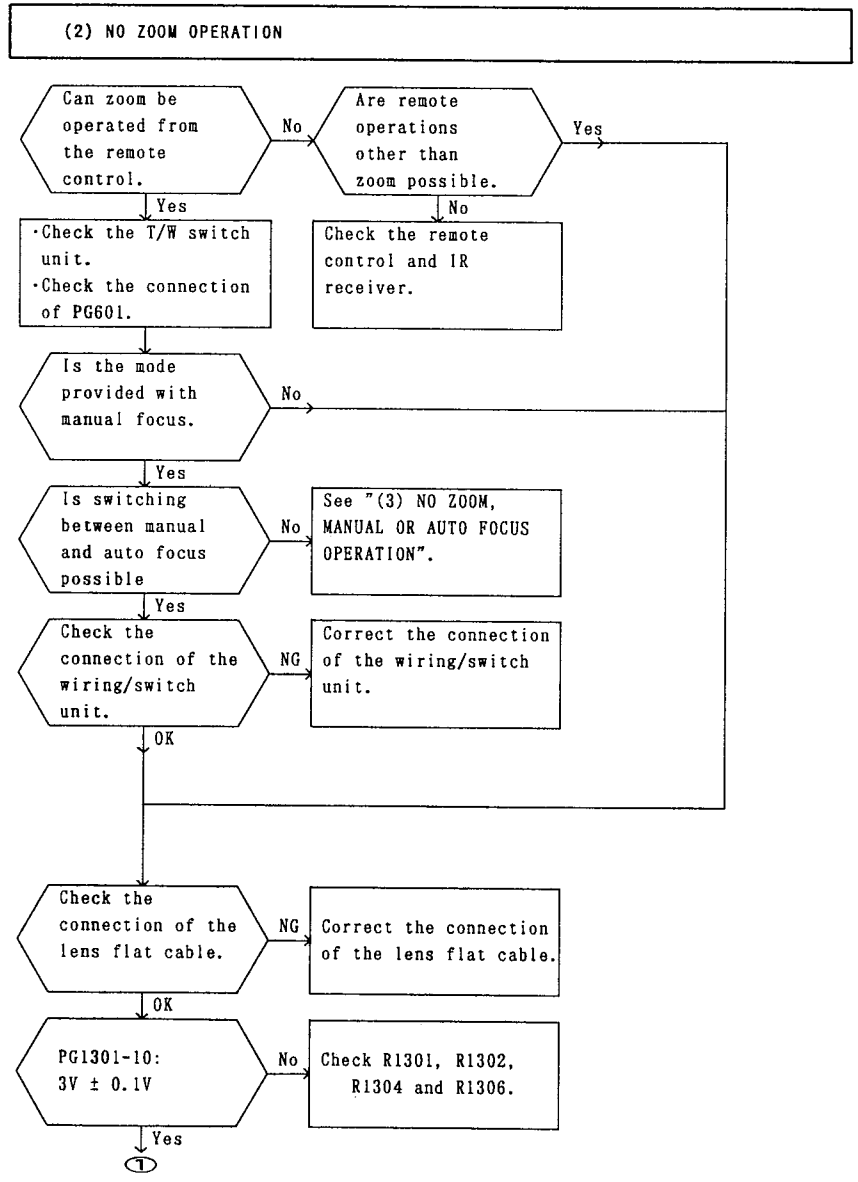
4.4 Troubleshooting of Autofocus





Note: Check the items marked * by pressing the manual focus FAR and NEAR switches alternately. (With a camera/recorder which does not have the manual focus function, point at the subjects at approx. 1 m and 3 m away alternately.)





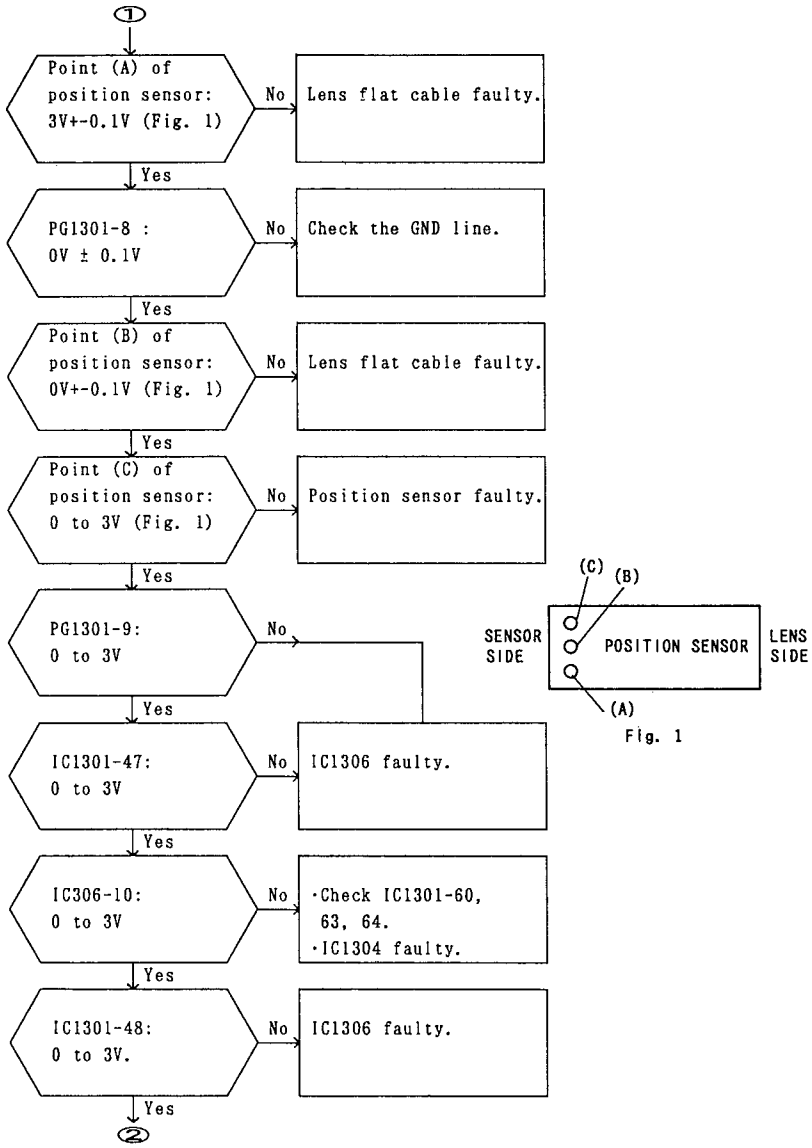
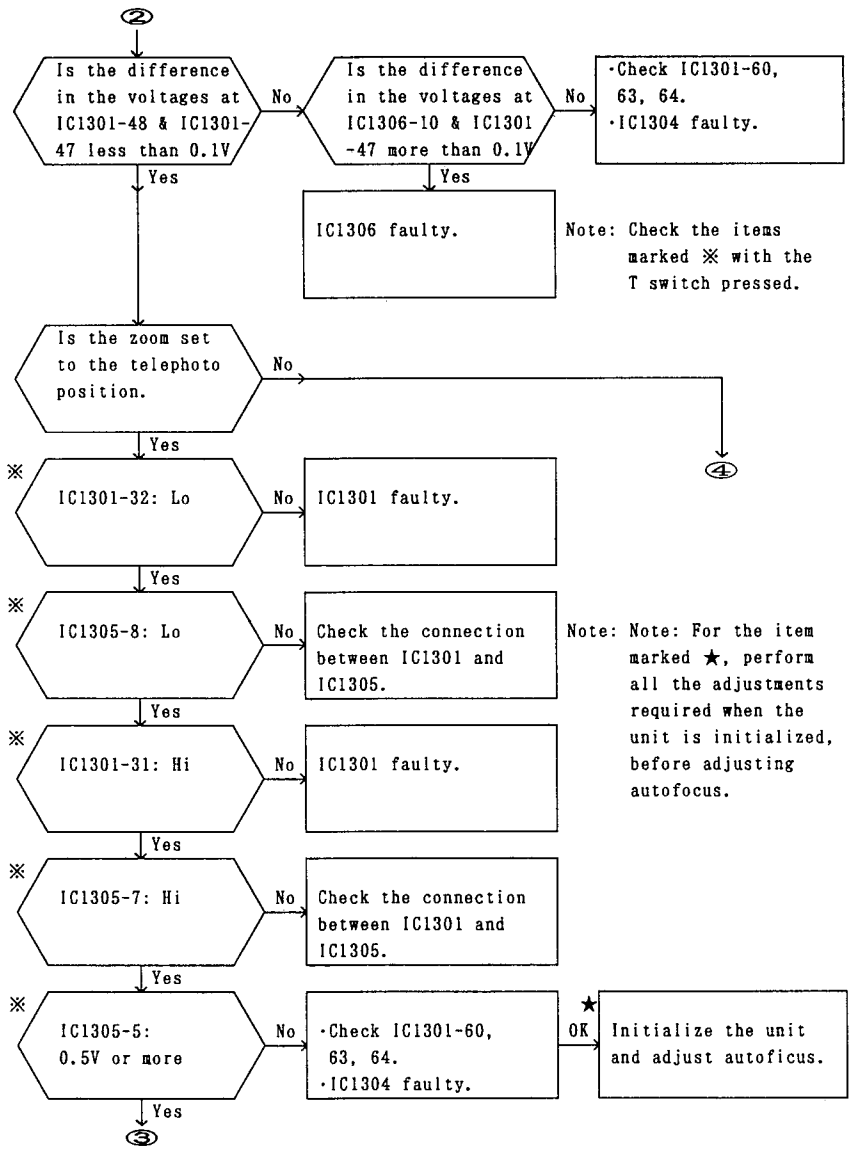
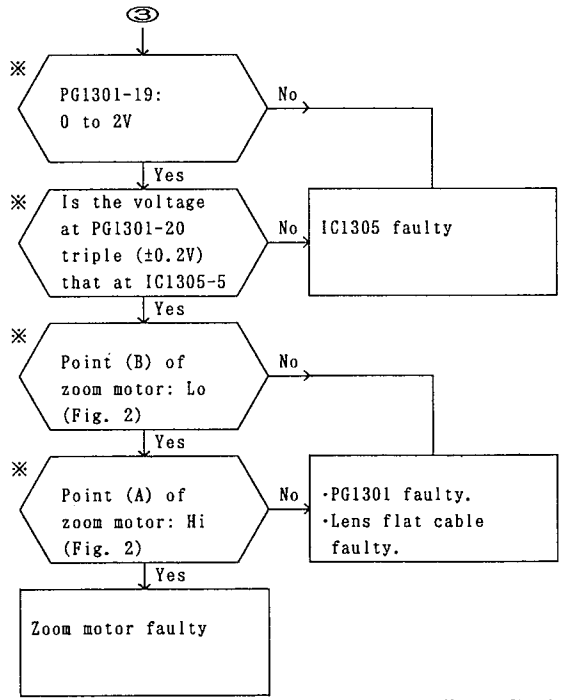

①
Point (A) of position sensor: 3V+-0.1V (Fig. 1)
No
Lens flat cable faulty.
Yes
PG1301-8 : 0V ± 0.1V
No
Check the GND line.
Yes
Point (B) of position sensor: 0V+-0.1V (Fig. 1)
No
Lens flat cable faulty.
Yes
Point (C) of position sensor: 0 to 3V (Fig. 1)
No
Position sensor faulty.
Yes
PG1301-9: 0 to 3V
No
Yes
IC1301-47: 0 to 3V
No
IC1306 faulty.
Yes
IC306-10: 0 to 3V
No
·Check IC1301-60, 63, 64.
·IC1304 faulty.
Yes
IC1301-48: 0 to 3V.
No
IC1306 faulty.
Yes
②
(C)
(B)
SENSOR SIDE
POSITION SENSOR
LENS SIDE
(A)

Fig. 1


②
Is the difference in the voltages at IC1301-48 & IC1301-47 less than 0.1V
No
Is the difference in the voltages at IC1306-10 & IC1301-47 more than 0.1V
No
·Check IC1301-60, 63, 64.
·IC1304 faulty.
Yes
IC1306 faulty.
Note: Check the items marked ※ with the T switch pressed.
Is the zoom set to the telephoto position.
No
④
Yes
※ IC1301-32: Lo
No
IC1301 faulty.
Yes
※ IC1305-8: Lo
No
Check the connection between IC1301 and IC1305.
Note: Note: For the item marked ★, perform all the adjustments required when the unit is initialized, before adjusting autofocus.
Yes
※ IC1301-31: Hi
No
IC1301 faulty.
Yes
※ IC1305-7: Hi
No
Check the connection between IC1301 and IC1305.
Yes
※ IC1305-5: 0.5V or more
No
·Check IC1301-60, 63, 64.
·IC1304 faulty.
★
OK
Initialize the unit and adjust autoficus.
Yes
③



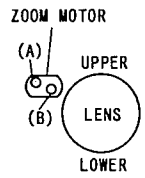
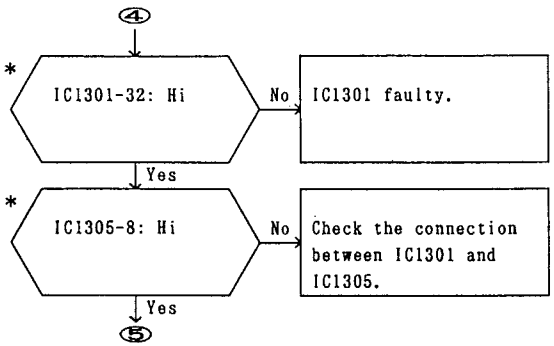
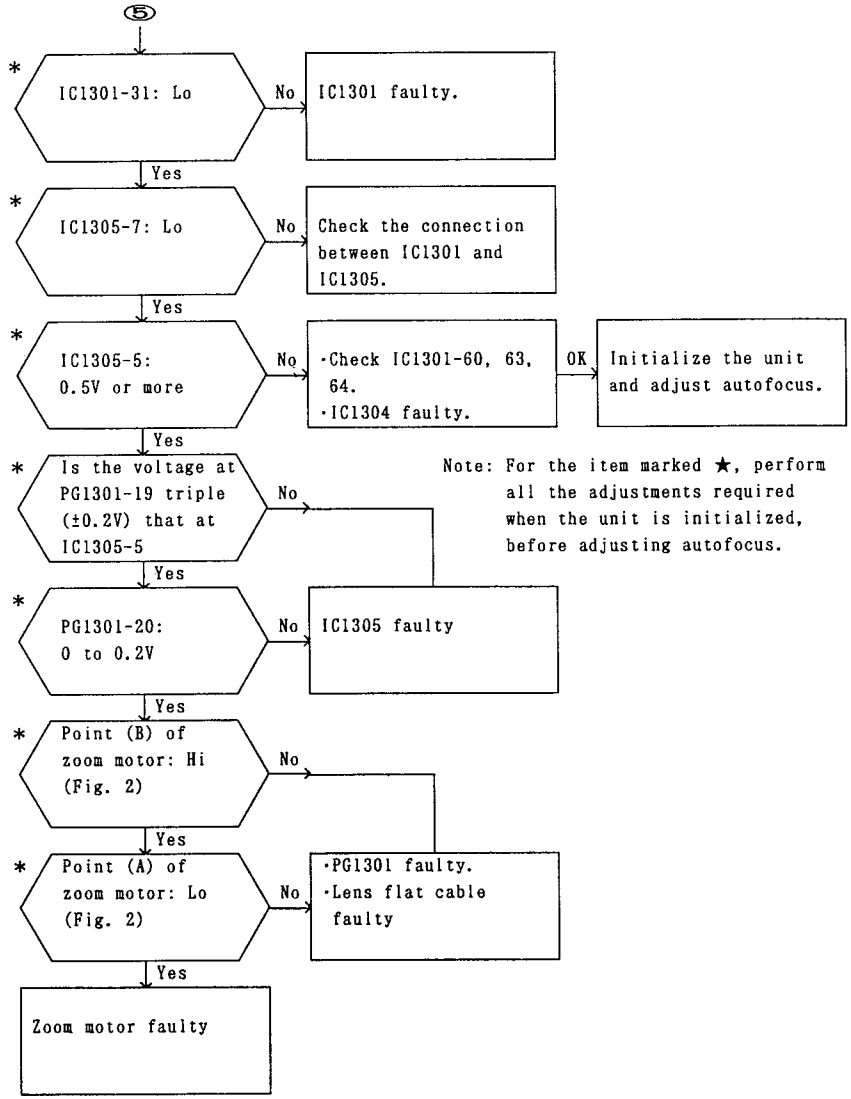


Fig. 2

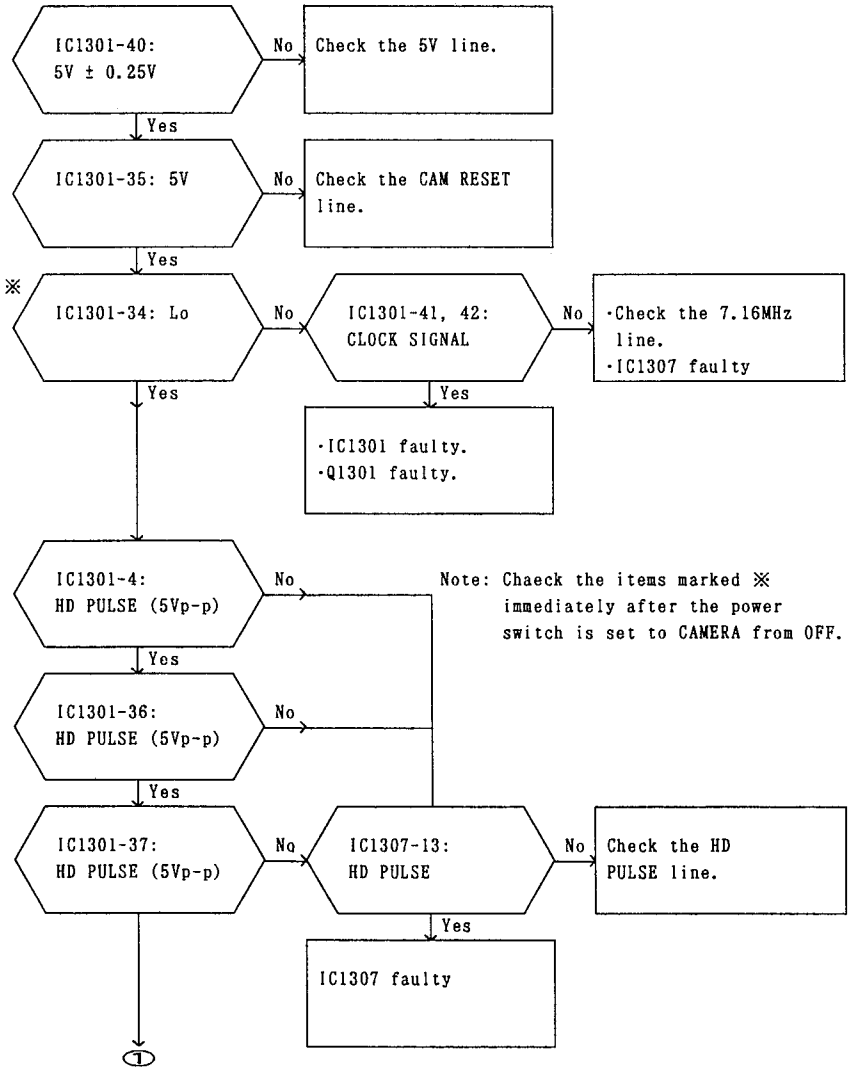
Note: Check the items marked * with the T switch pressed.



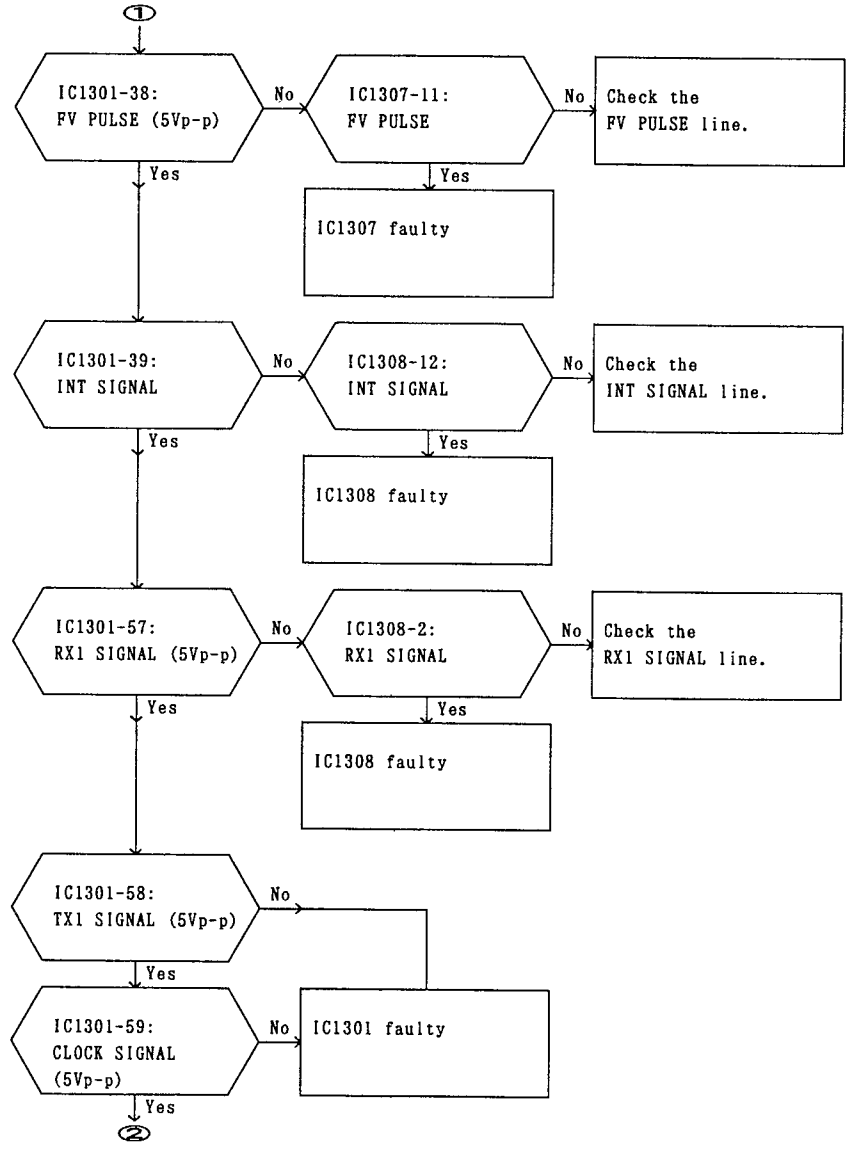


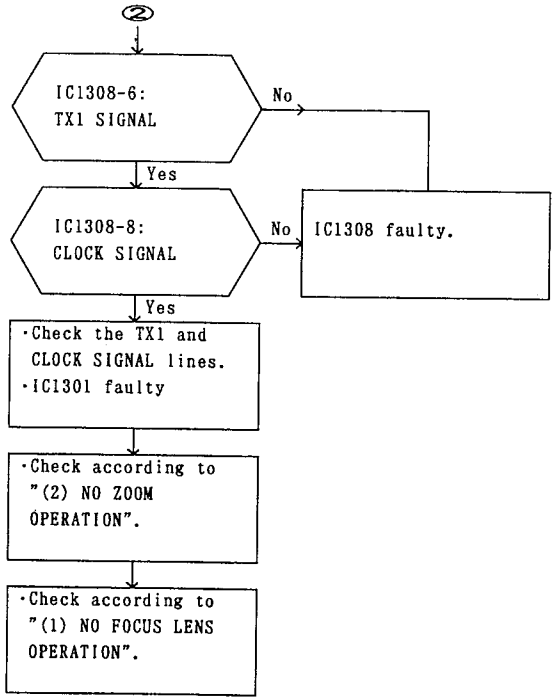
Note: For the item marked ★, perform all the adjustments required when the unit is initialized, before adjusting autofocus.

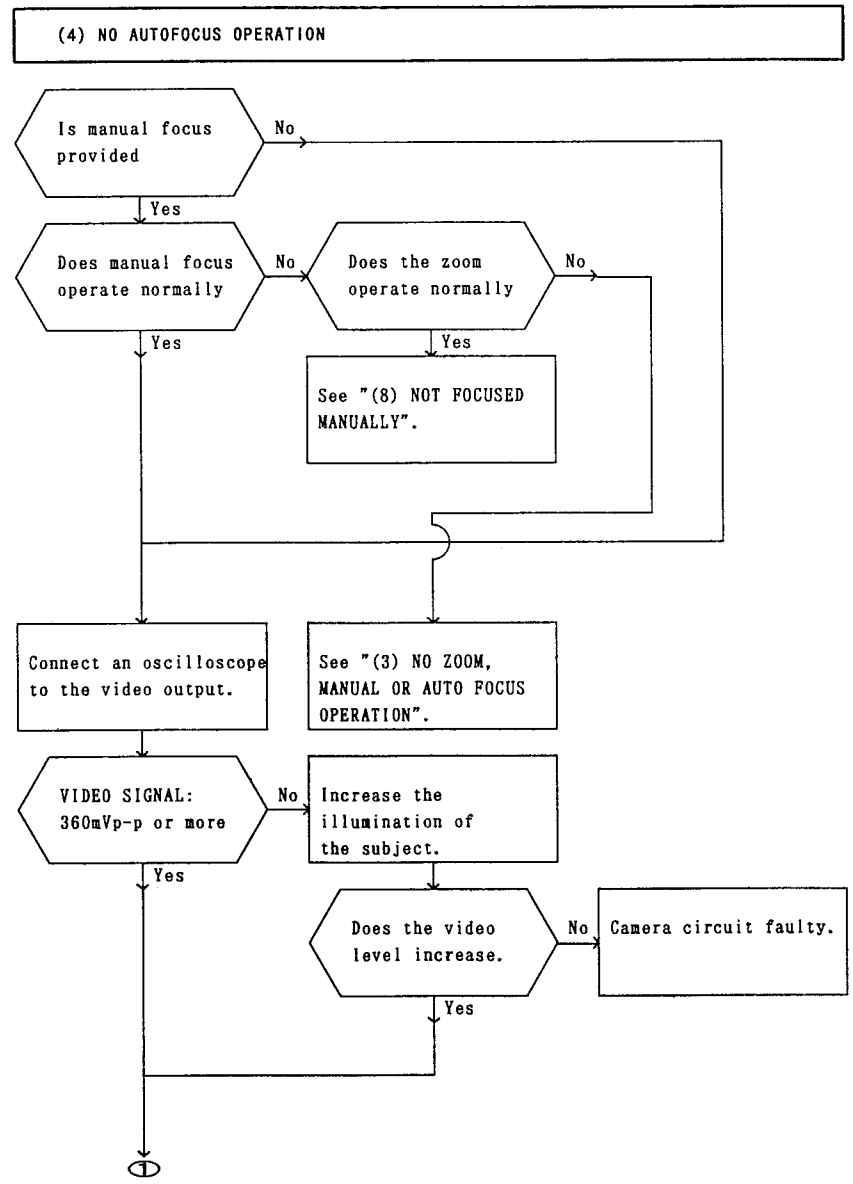
(3) NO ZOOM, MANUAL OR AUTO FOCUS OPERATION

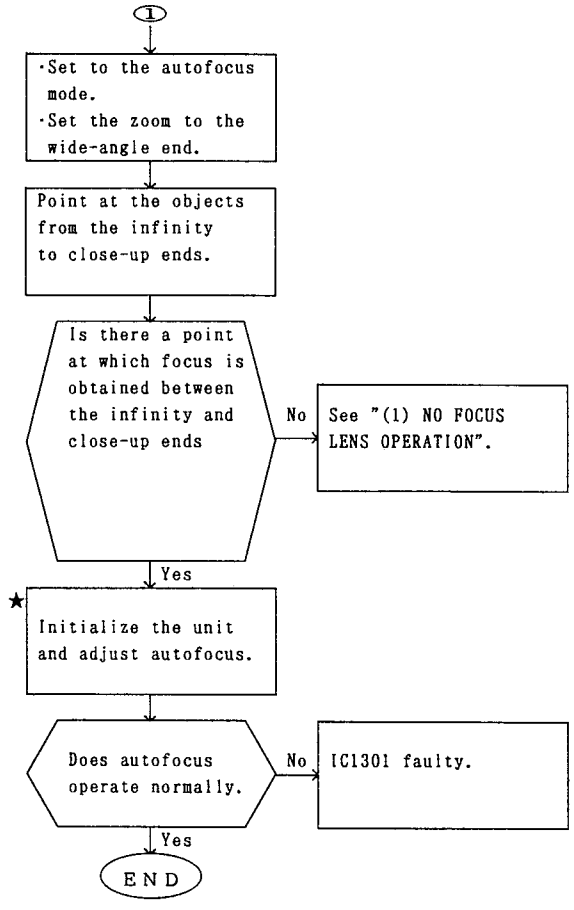


Note: Chaeck the items marked ※ immediately after the power switch is set to CAMERA from OFF.



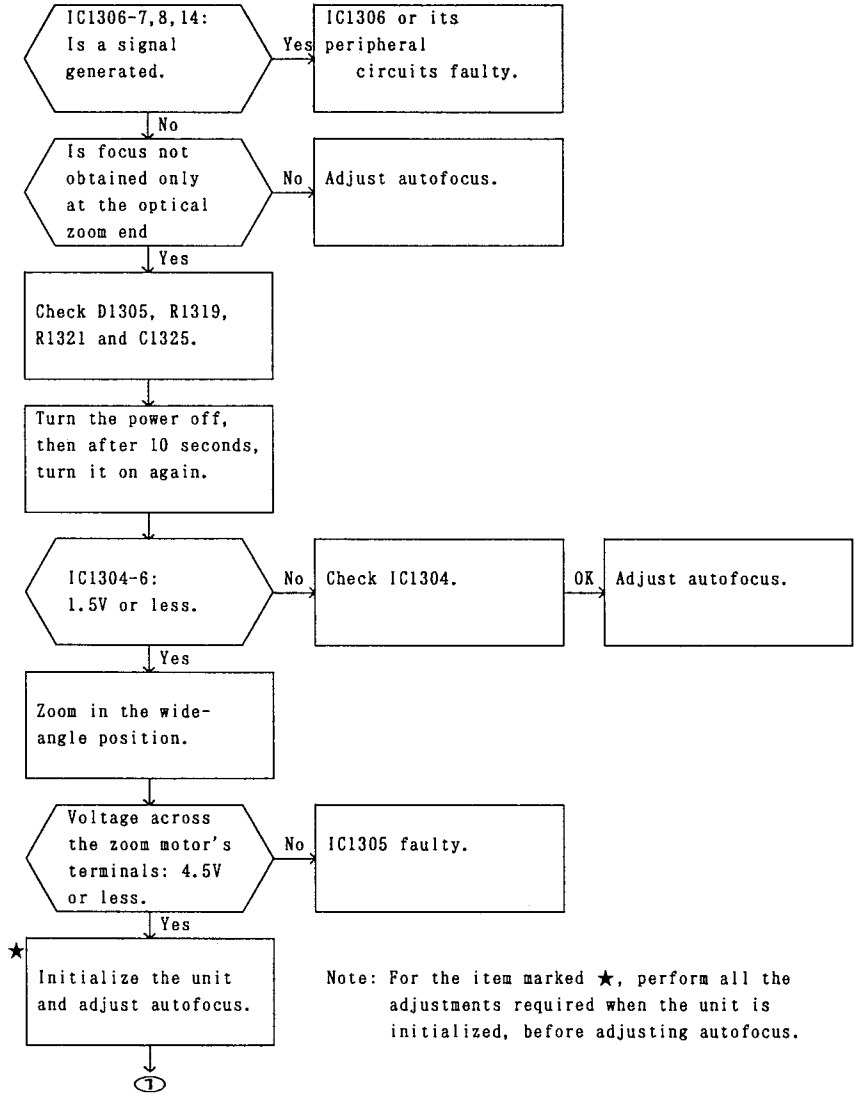

②
IC1308-6:
TX1 SIGNAL
No
Yes
IC1308-8:
CLOCK SIGNAL
No
IC1308 faulty.
Yes
·Check the TX1 and CLOCK SIGNAL lines.
·IC1301 faulty
·Check according to "(2) NO ZOOM OPERATION".
·Check according to "(1) NO FOCUS LENS OPERATION".


(4) NO AUTOFOCUS OPERATION
Is manual focus provided
No
Yes
Does manual focus operate normally
No
Does the zoom operate normally
No
Yes
Yes
See "(8) NOT FOCUSED MANUALLY".
Connect an oscilloscope to the video output.
See "(3) NO ZOOM, MANUAL OR AUTO FOCUS OPERATION".
VIDEO SIGNAL: 360mVp-p or more
No
Increase the illumination of the subject.
Yes
Does the video level increase.
No
Camera circuit faulty.
Yes
①

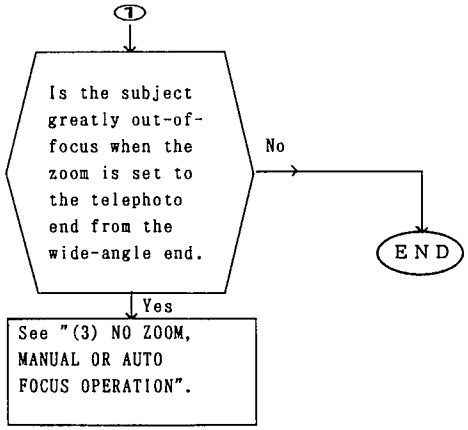

①
·Set to the autofocus mode.
·Set the zoom to the wide-angle end.
Point at the objects from the infinity to close-up ends.
Is there a point at which focus is obtained between the infinity and close-up ends
No
See "(1) NO FOCUS LENS OPERATION".
Yes
★
Initialize the unit and adjust autofocus.
Does autofocus operate normally.
No
IC1301 faulty.
Yes
END

Note: For the item marked *, perform all the adjustments required when the unit is initialized, before adjusting autofocus.

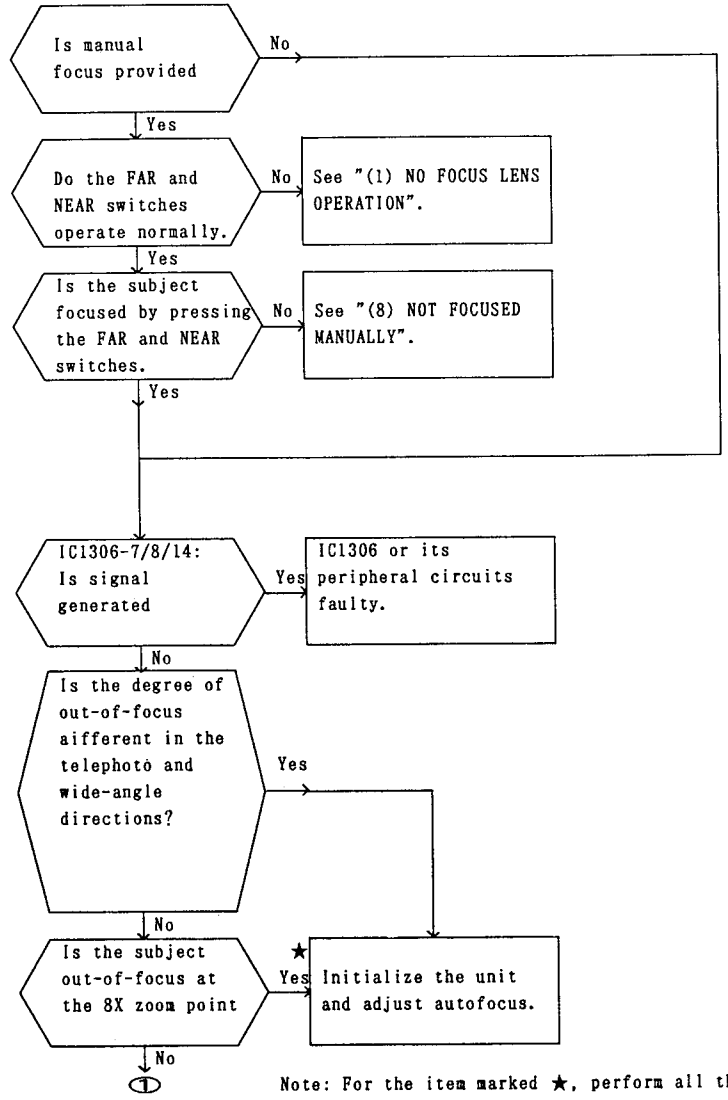
(5) SUBJECT IS GREATLY OUT-OF-FOCUS WHEN ZOOMED FROM THE WIDE-ANGLE END TO THE TELEPHOTO END.



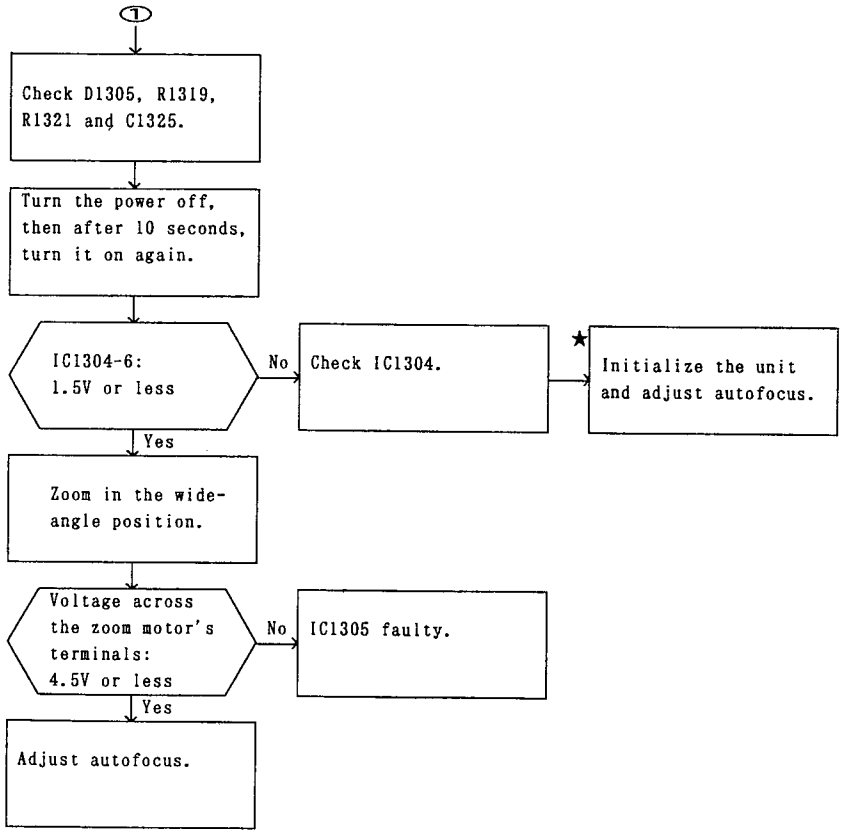
Note: For the item marked ★, perform all the adjustments required when the unit is initialized, before adjusting autofocus.


①
Is the subject greatly out-of-focus when the zoom is set to the telephoto end from the wide-angle end.
No
END
Yes
See "(3) NO ZOOM, MANUAL OR AUTO FOCUS OPERATION".

(6) SUBJECT IS GREATLY OUT-OF-FOCUS WHEN ZOOMED FROM THE TELEPHOTO END TO THE WIDE-ANGLE END.

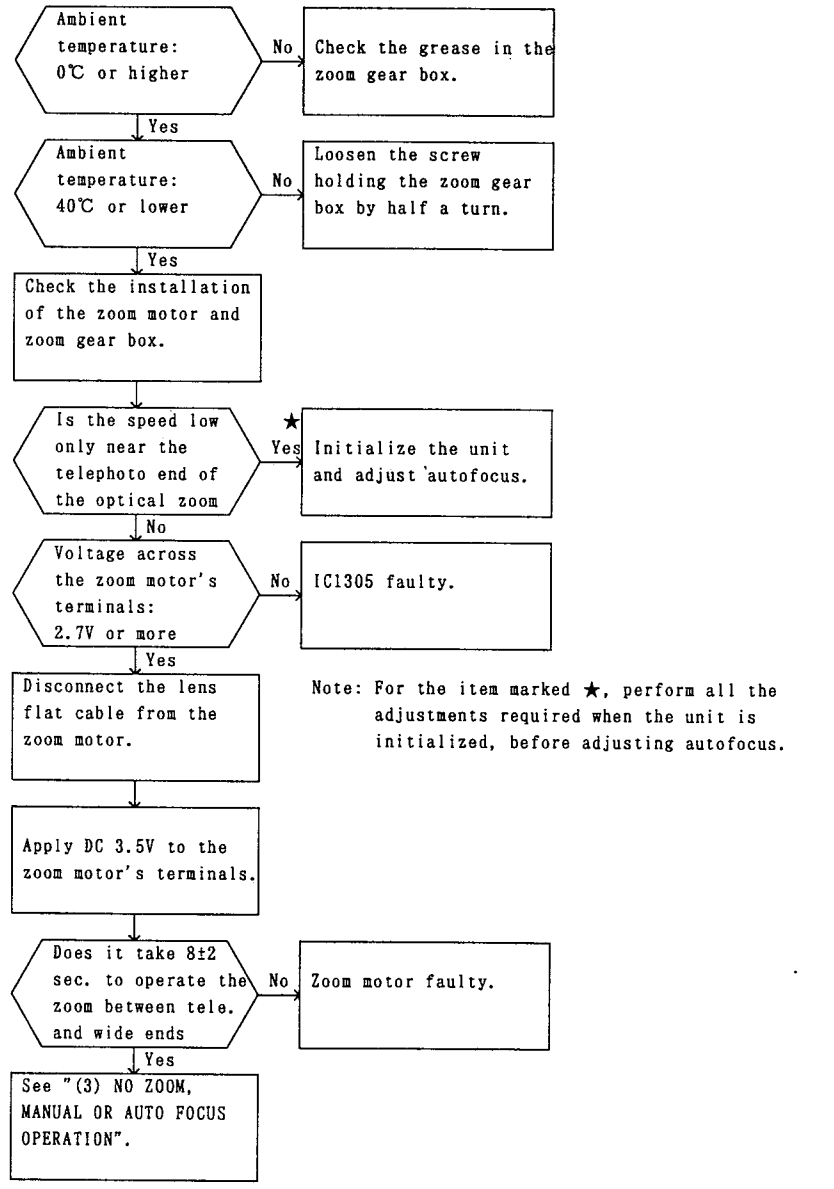


Note: For the item marked ★, perform all the adjustments required when the unit is initialized, before adjusting autofocus.



Note: For the item marked ★, perform all the adjustments required when the unit is initialized, before adjusting autofocus.

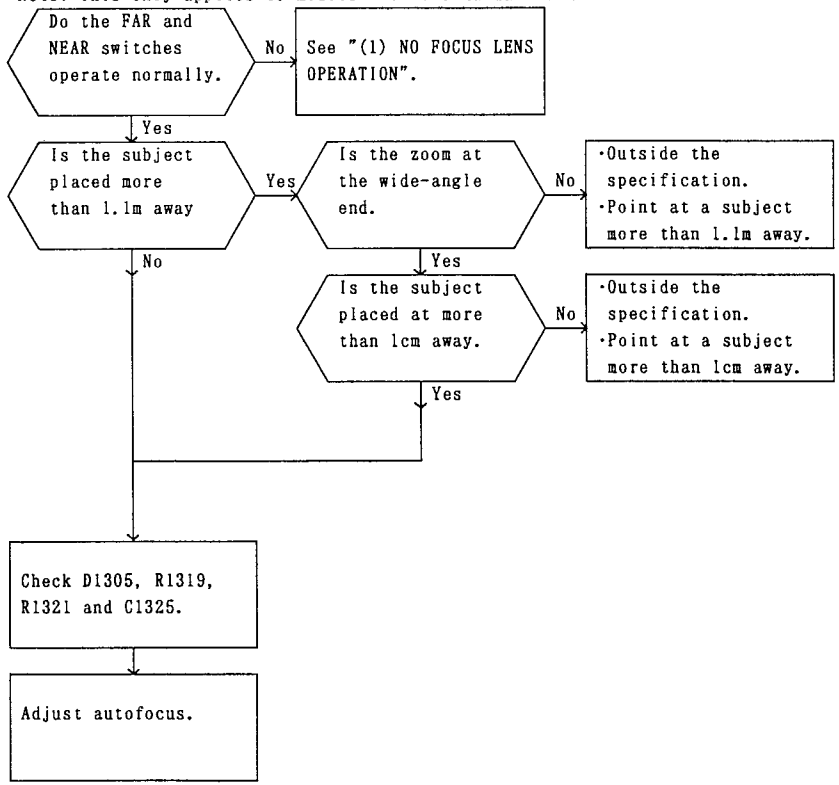
(7) EXTREMELY LOW ZOOM SPEED


Ambient temperature: 0℃ or higher
No
Check the grease in the zoom gear box.
Yes
Ambient temperature: 40℃ or lower
No
Loosen the screw holding the zoom gear box by half a turn.
Yes
Check the installation of the zoom motor and zoom gear box.
Is the speed low only near the telephoto end of the optical zoom
★
Yes
Initialize the unit and adjust autofocus.
No
Voltage across the zoom motor's terminals: 2.7V or more
No
IC1305 faulty.
Yes
Disconnect the lens flat cable from the zoom motor.
Apply DC 3.5V to the zoom motor's terminals.
Does it take 8±2 sec. to operate the zoom between tele. and wide ends
No
Zoom motor faulty.
Yes
See "(3) NO ZOOM, MANUAL OR AUTO FOCUS OPERATION".

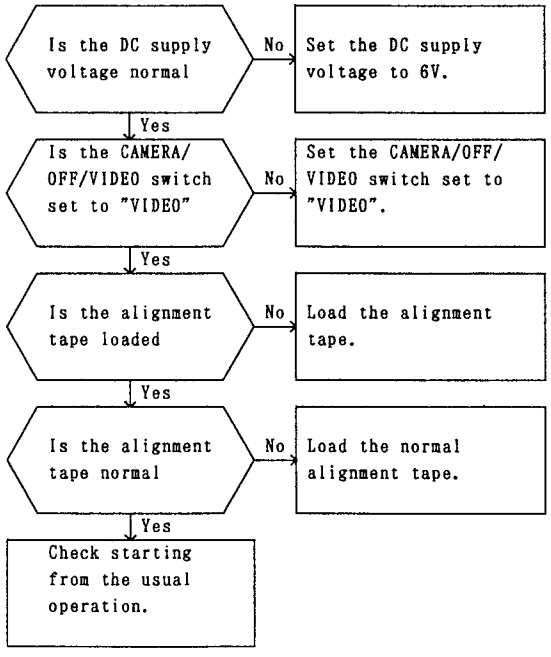
Note: For the item marked ★, perform all the adjustments required when the unit is initialized, before adjusting autofocus.

(8) NOT FOCUSED MANUALLY

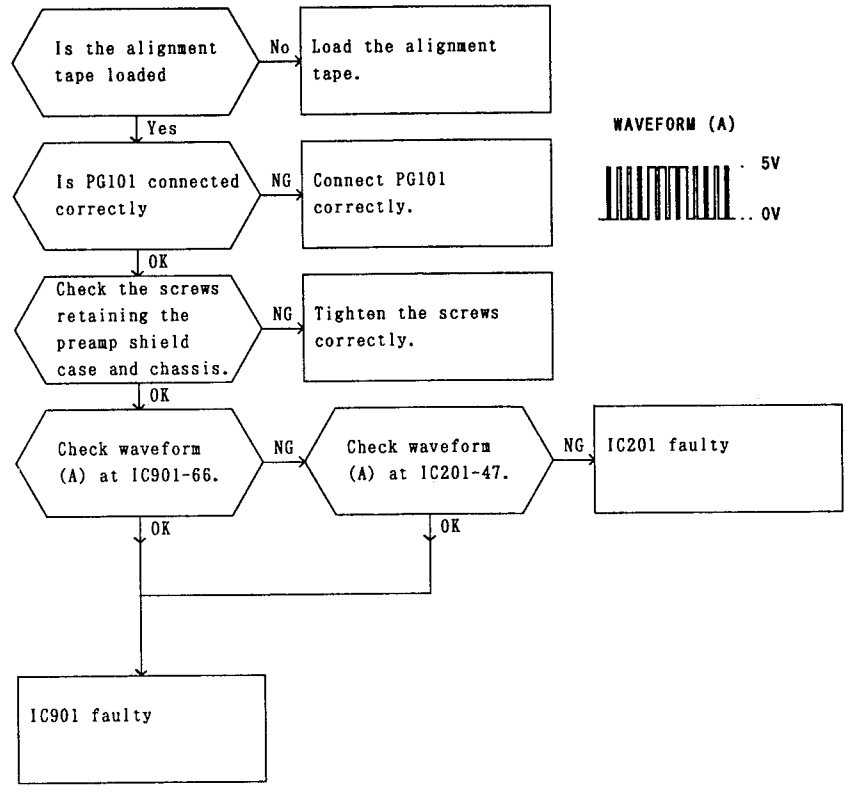
Note: This only applies to models with the manual focus function.


Do the FAR and NEAR switches operate normally.
No
See "(1) NO FOCUS LENS OPERATION".
Yes
Is the subject placed more than 1.1m away
Yes
Is the zoom at the wide-angle end.
No
·Outside the specification.
·Point at a subject more than 1.1m away.
No
Yes
Is the subject placed at more than 1cm away.
No
·Outside the specification.
·Point at a subject more than 1cm away.
Yes
Check D1305, R1319, R1321 and C1325.
Adjust autofocus.

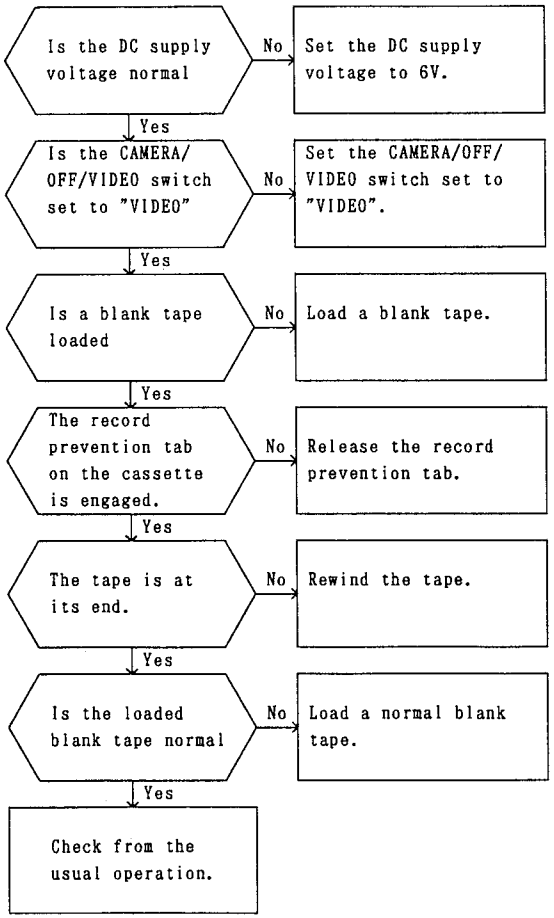
(1) NO PLAYBACK VIDEO



(2) VERTICAL SYNC LOSS



(3) NO VIDEO RECORDING



CHAPTER 5

SCHEMATIC & CIRCUIT BOARD DIAGRAMS

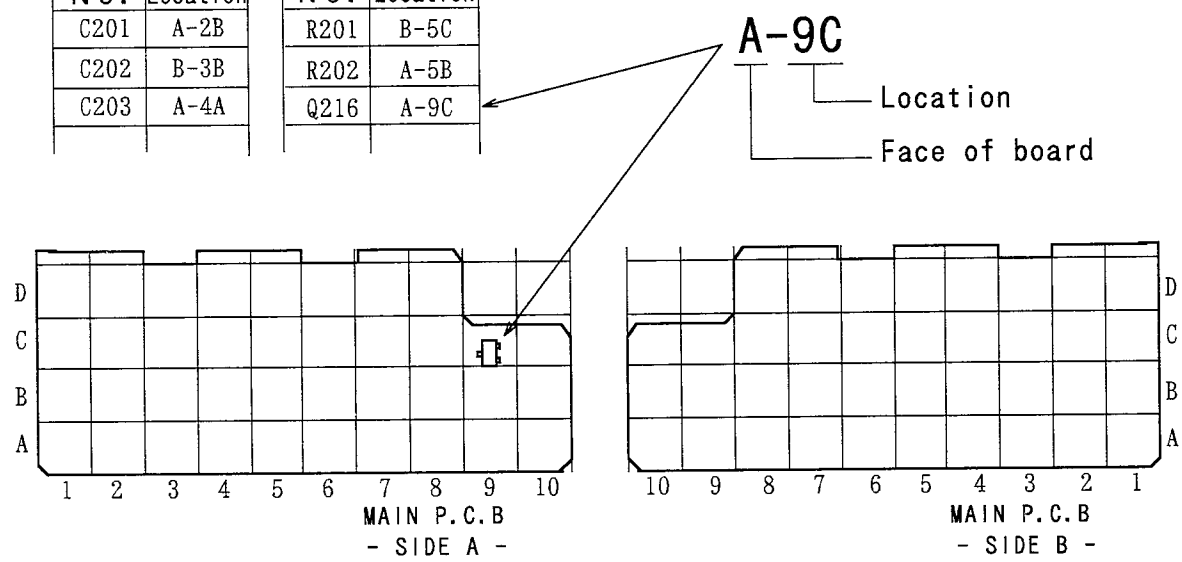
[Parts Location Indexing Tables]

This service manual shows the parts location indexing tables beside the major circuit board diagrams. These tables indicate the locations of each part on the circuit boards. Use the tables to locate the parts on the circuit boards.

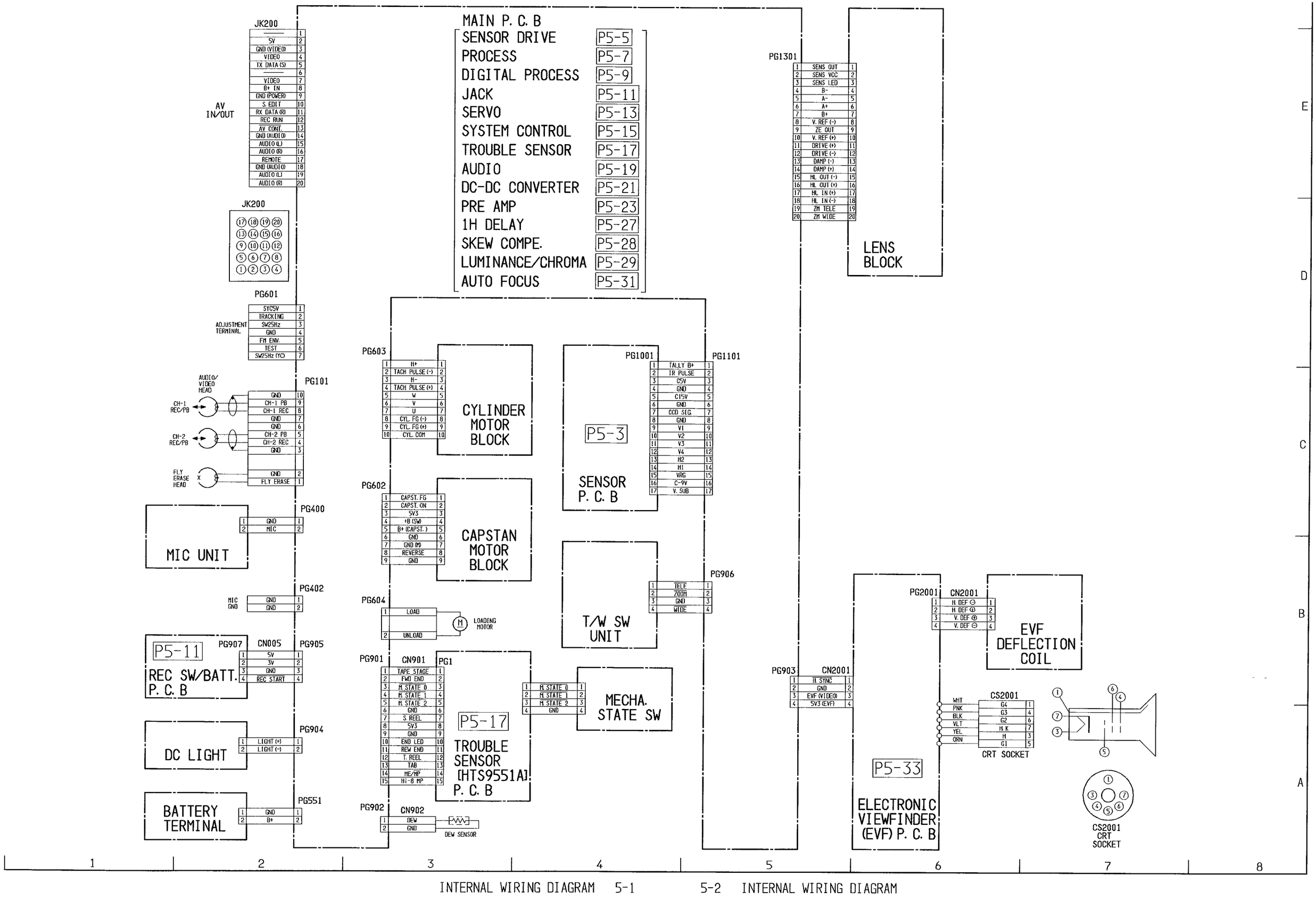
IDENTIFICATION OF PARTS LOCATION

Symbol No.	Parts Location
C201	A-2B
C202	B-3B
C203	A-4A

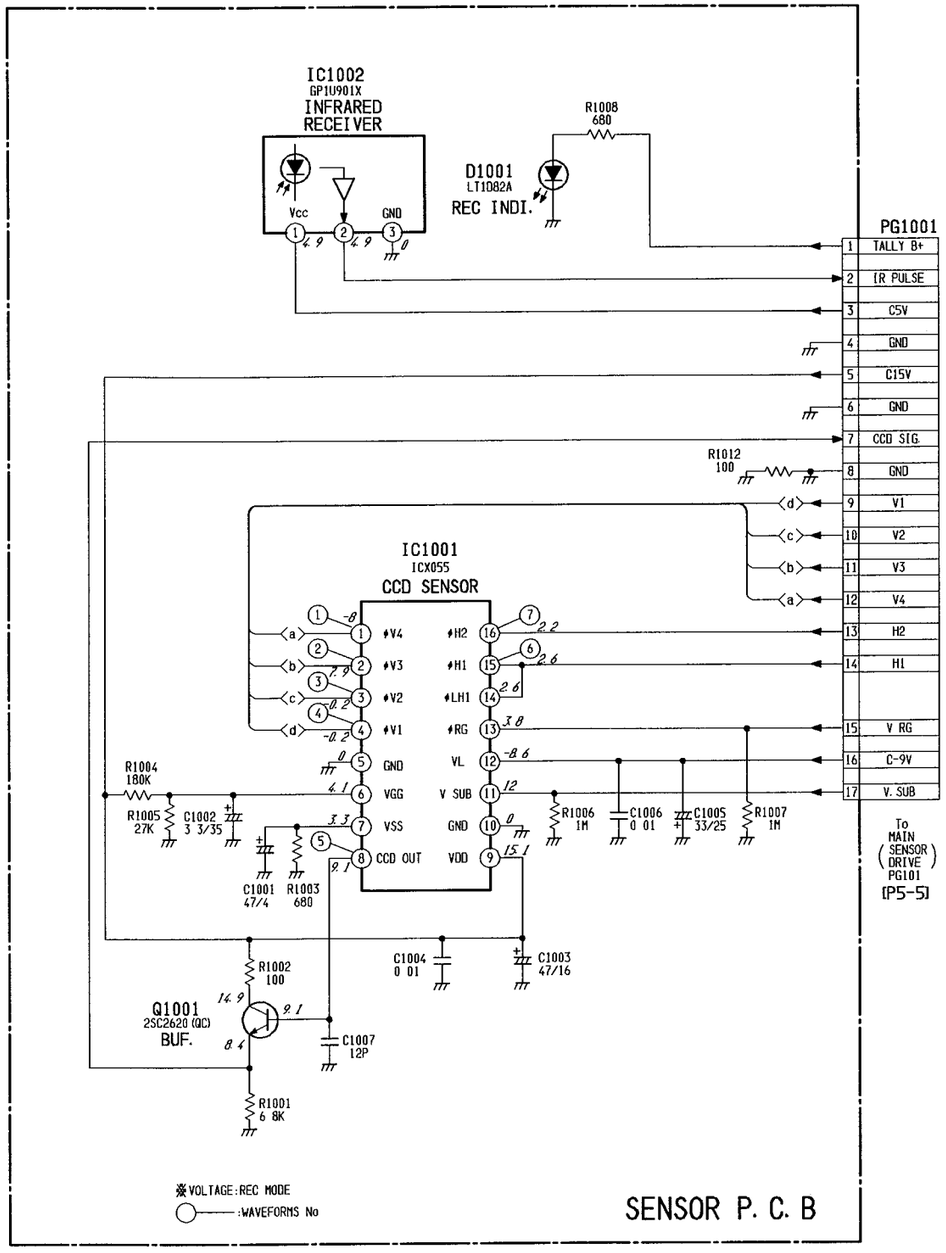
Symbol No.	Parts Location
R201	B-5C
R202	A-5B
Q216	A-9C



INTERNAL WIRING DIAGRAM

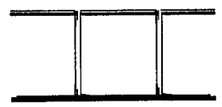


SENSOR SCHEMATIC DIAGRAM

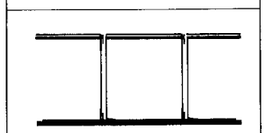


SENSOR/PROCESS WAVEFORMS

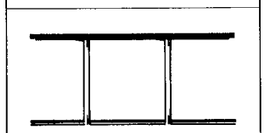
1-A IC1001-1 9.0Vp-p
2V/5.0msec.cm
COLOR CHART



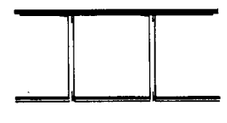
2-A IC1001-2 9.0Vp-p
2V/5 0msec cm
COLOR CHART



3-A IC1001-3 9.0Vp-p
2V/5 0msec.cm
COLOR CHART

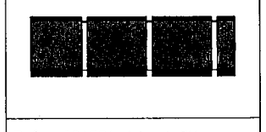


4-A IC1001-4 9.0Vp-p
2V/5.0msec cm
COLOR CHART



5-A IC1001-8 600mVp-p
0 2V/20.0μ sec cm
COLOR CHART

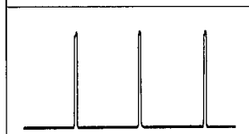
6-A IC1001-15 6.0Vp-p
2V/20.0μ sec.cm
COLOR CHART



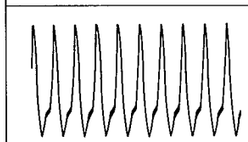
7-A IC1001-16 6.0Vp-p
2V/20.0μ sec.cm
COLOR CHART

1-A IC1101-3 300mVp-p
0.1V/20.0μ sec.cm
COLOR CHART

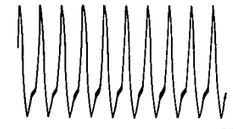
2-A IC1101-26 3.3Vp-p
1V/20.0μ sec cm
COLOR CHART



3-A IC1101-45 2.7Vp-p
0.5V/100nsec.cm
COLOR CHART

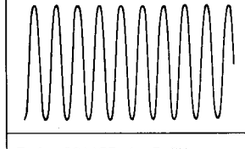


4-A IC1101-46 2.7Vp-p
0 5V/100nsec cm
COLOR CHART

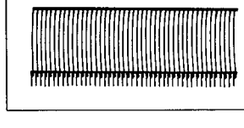


5-A IC1102-31 1.0Vp-p
0.2V/20.0μ sec.cm
COLOR CHART

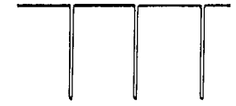
6-A IC1102-42 4.0Vp-p
1V/100nsec.cm
COLOR CHART



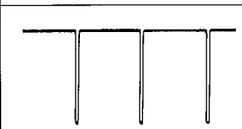
7-A IC1103-6 3 3Vp-p
1V/10.0μ sec.cm
COLOR CHART



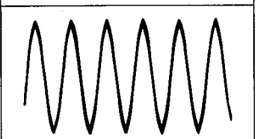
8-A IC1103-16 3.3Vp-p
1V/5.0msec.cm
COLOR CHART



9-A IC1103-19 3 3Vp-p
1V/20.0μ sec.cm
COLOR CHART

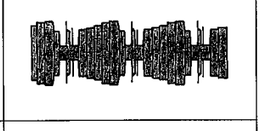


10-A IC1103-27 1.1Vp-p
0.2V/20.0nsec.cm
COLOR CHART



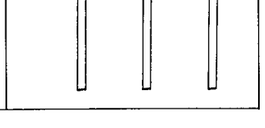
11-A

12-A IC1103-42 600mVp-p
0.2V/20.0μ sec.cm
COLOR CHART

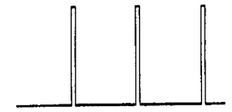


13-A IC1103-46 1.0Vp-p
0.2V/20.0μ sec.cm
COLOR CHART

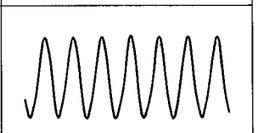
14-A IC1103-90 3 3Vp-p
1V/20.0μ sec.cm
COLOR CHART



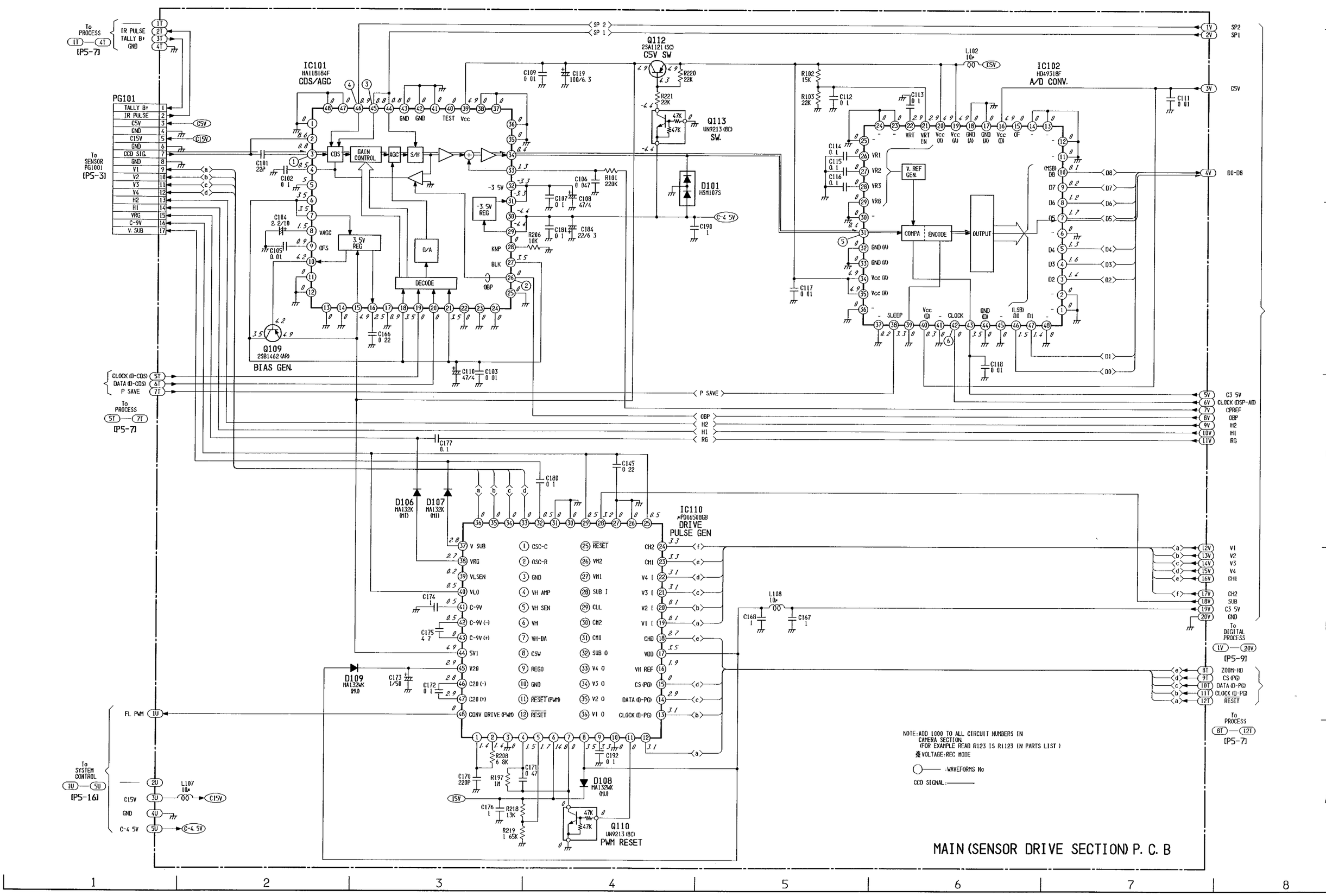
15-A IC1103-103 3.3Vp-p
1V/20.0μ sec.cm
COLOR CHART



16-A IC1105-3 4.0Vp-p
1V/50.0nsec.cm
COLOR CHART

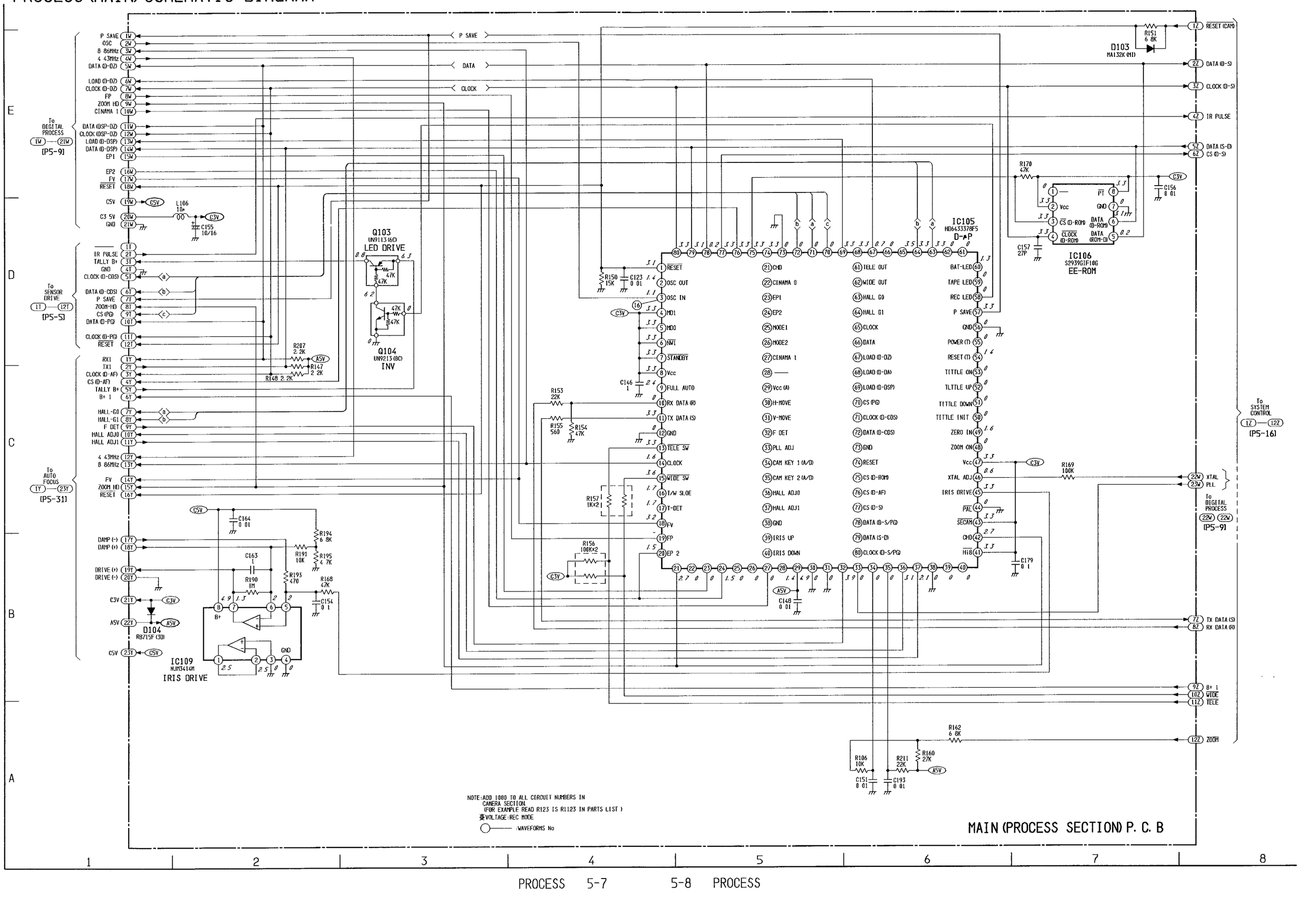


SENSOR DRIVE (MAIN) SCHEMATIC DIAGRAM

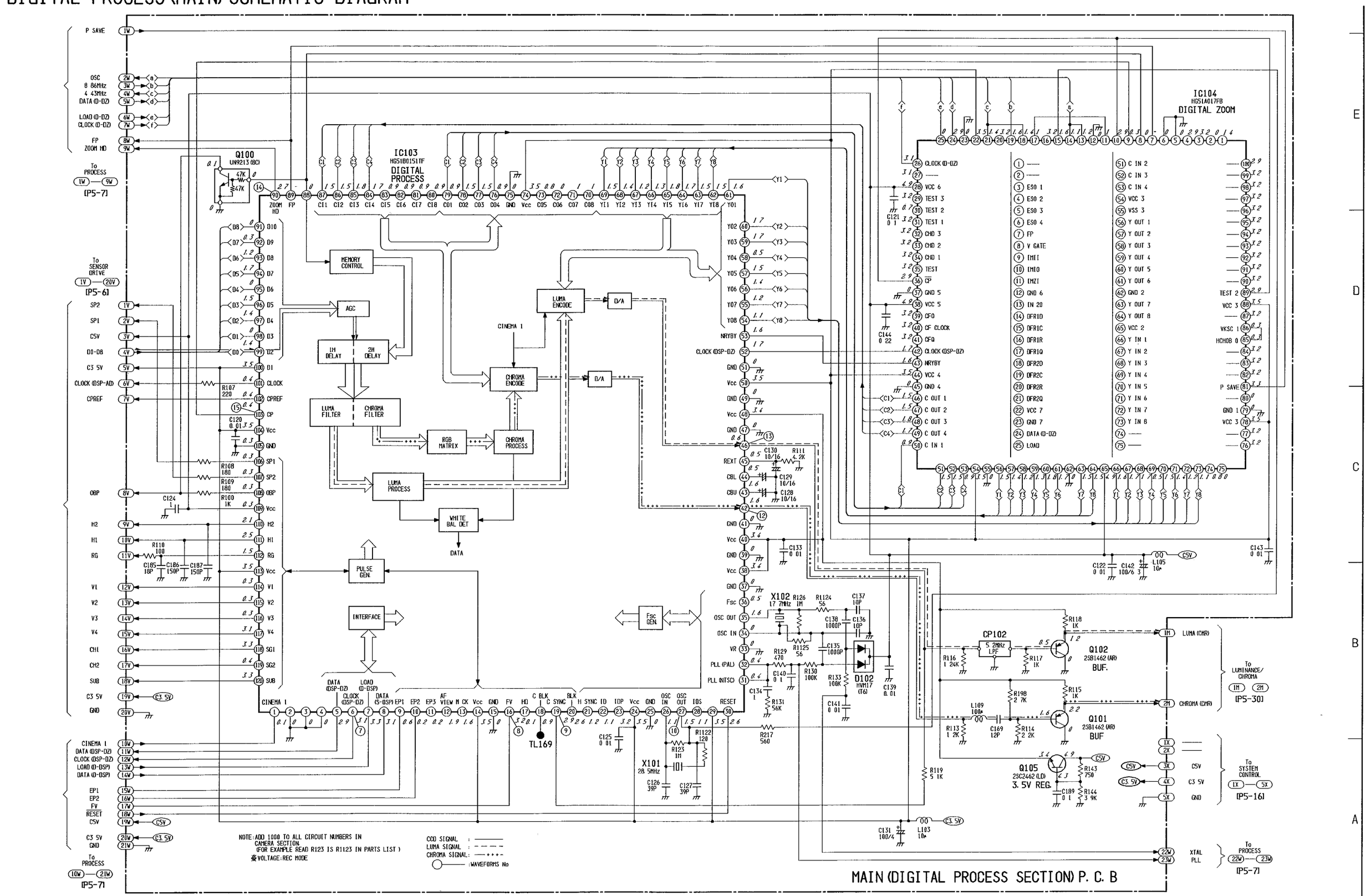


SENSOR DRIVE 5-5 5-6 SENSOR DRIVE

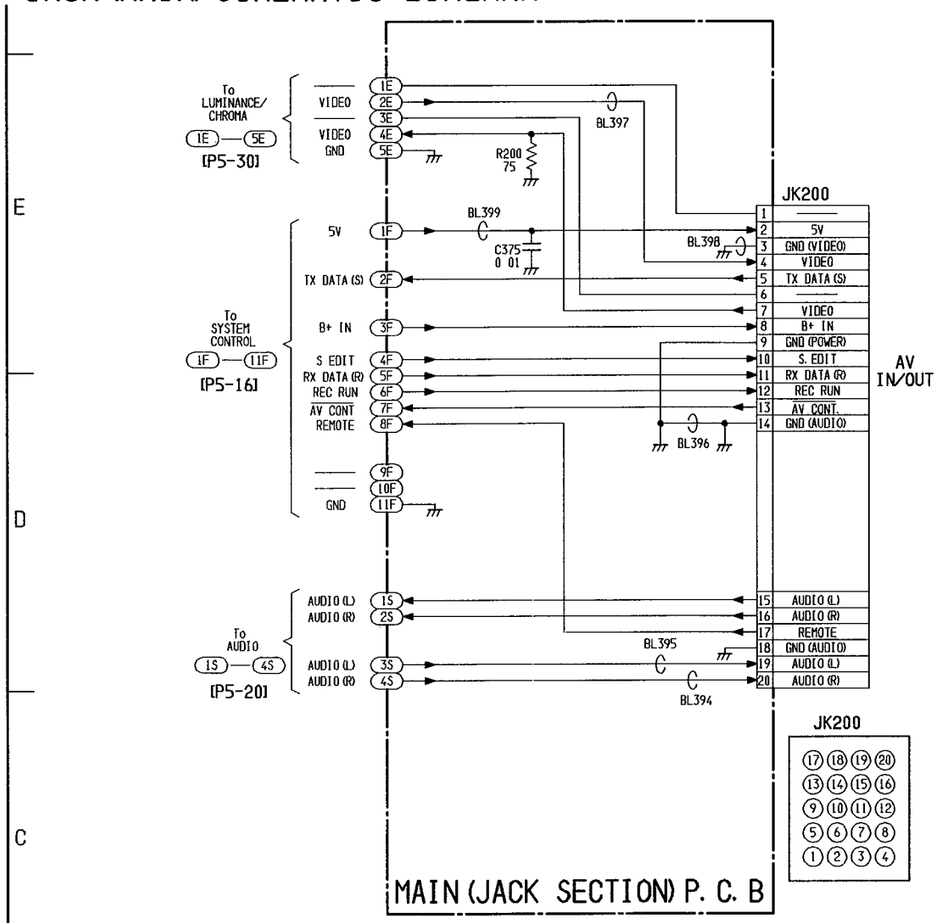
PROCESS (MAIN) SCHEMATIC DIAGRAM



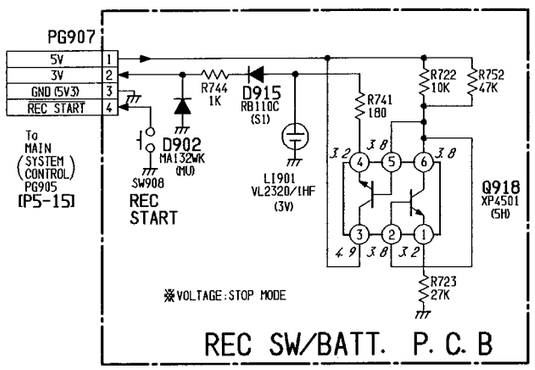
DIGITAL PROCESS (MAIN) SCHEMATIC DIAGRAM



JACK (MAIN) SCHEMATIC DIAGRAM

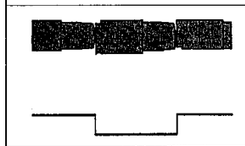


REC SW/BATT. SCHEMATIC DIAGRAM

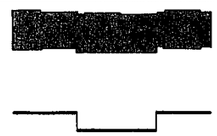


SERVO WAVEFORMS

1-B IC601-4 350mVp-p
0.2V/5.0msec. cm
PLAY

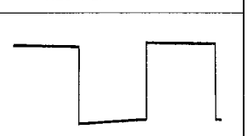


8-B PG601-5 400mVp-p
0.2V/5.0msec. cm
PLAY

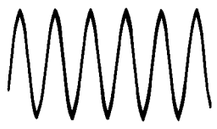


2-A IC601-7 2.7Vp-p
1V/20.0μsec cm
REC

9-A PG601-7 4.2Vp-p
1V/5.0msec. cm
REC/PLAY

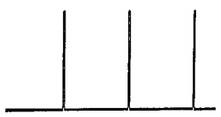


3-A IC601-11 750mVp-p
0.2V/50.0nsec. cm
REC/PLAY

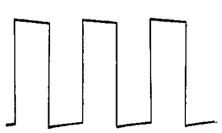


4-A IC601-18 5.1Vp-p
2V/20.0μsec cm
REC/PLAY

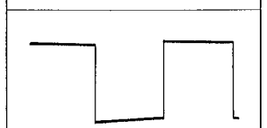
5-A IC602-17 5.0Vp-p
1V/10.0msec cm
REC/PLAY



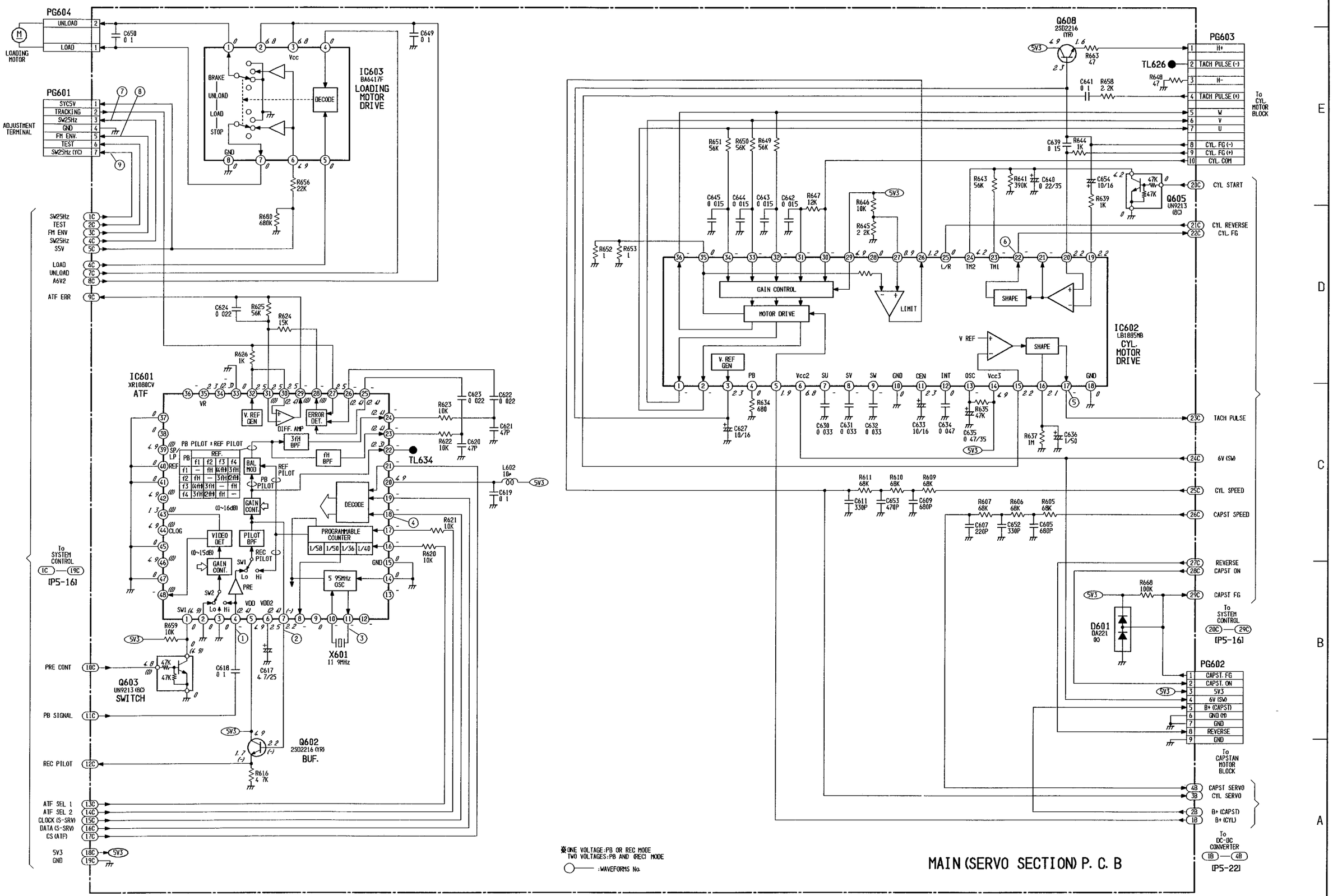
6-A IC602-22 5.0Vp-p
1V/1.0msec. cm
REC/PLAY



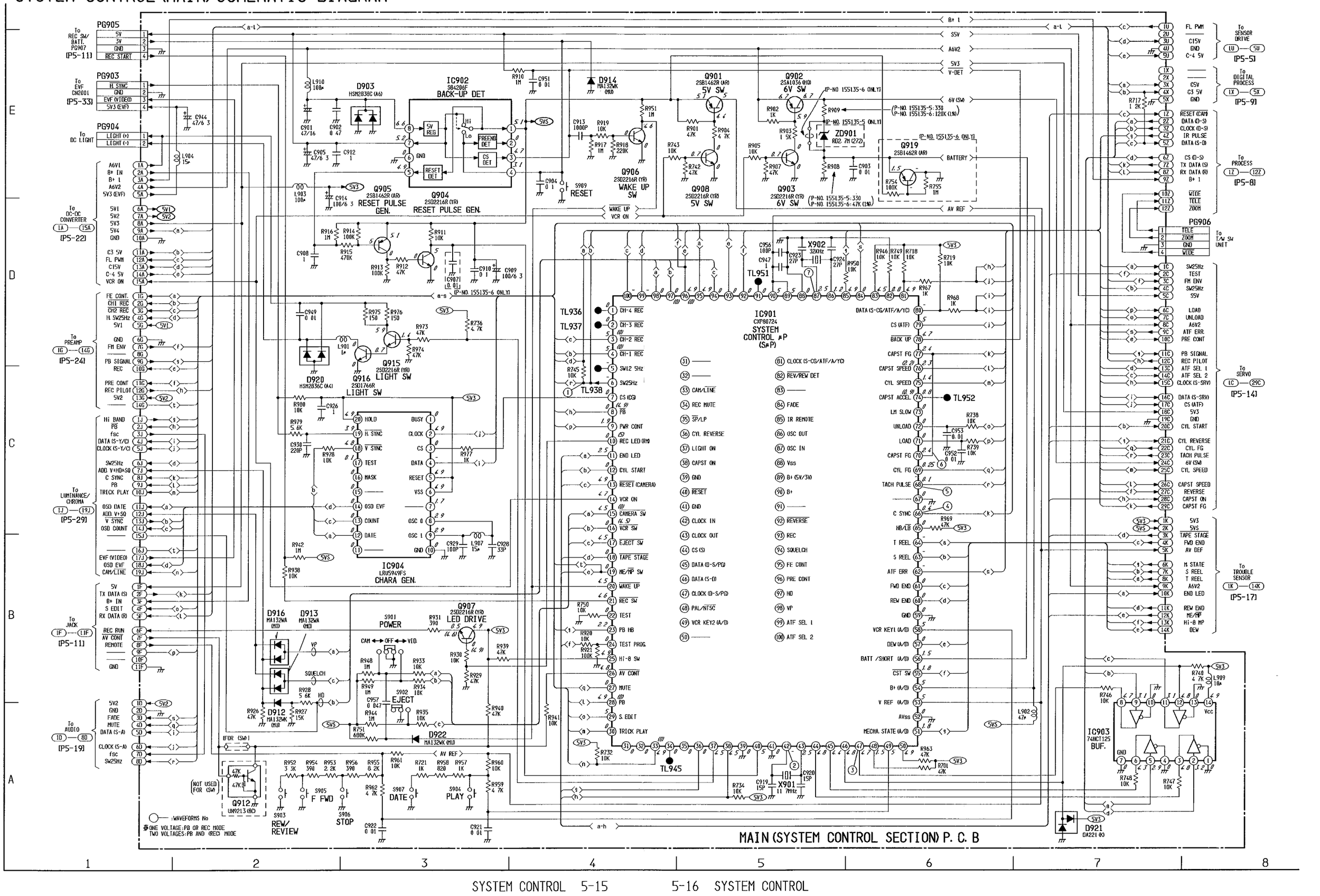
7-A PG601-3 5.1Vp-p
1V/5.0msec cm
REC/PLAY



SERVO (MAIN) SCHEMATIC DIAGRAM

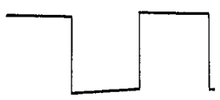


SYSTEM CONTROL (MAIN) SCHEMATIC DIAGRAM

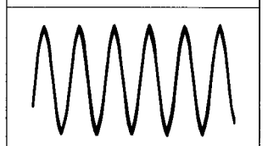


SYSTEM CONTROL WAVEFORMS

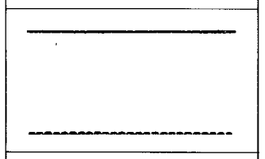
1-A IC901-6 4.2Vp-p
1V/5.0msec.cm
REC/PLAY



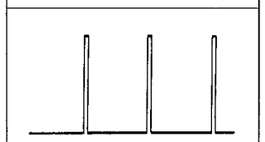
2-A IC901-42 4.7Vp-p
1V/50.0nsec.cm
REC/PLAY



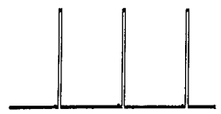
3-A IC901-47 5.0Vp-p
1V/20 0μ sec cm
REC/PLAY



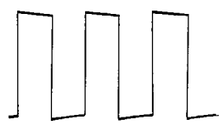
4-A IC901-66 5.0Vp-p
1V/20.0μ sec.cm
REC/PLAY



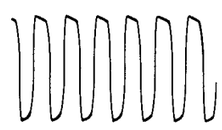
5-A IC901-68 5.0Vp-p
1V/10.0msec.cm
REC/PLAY



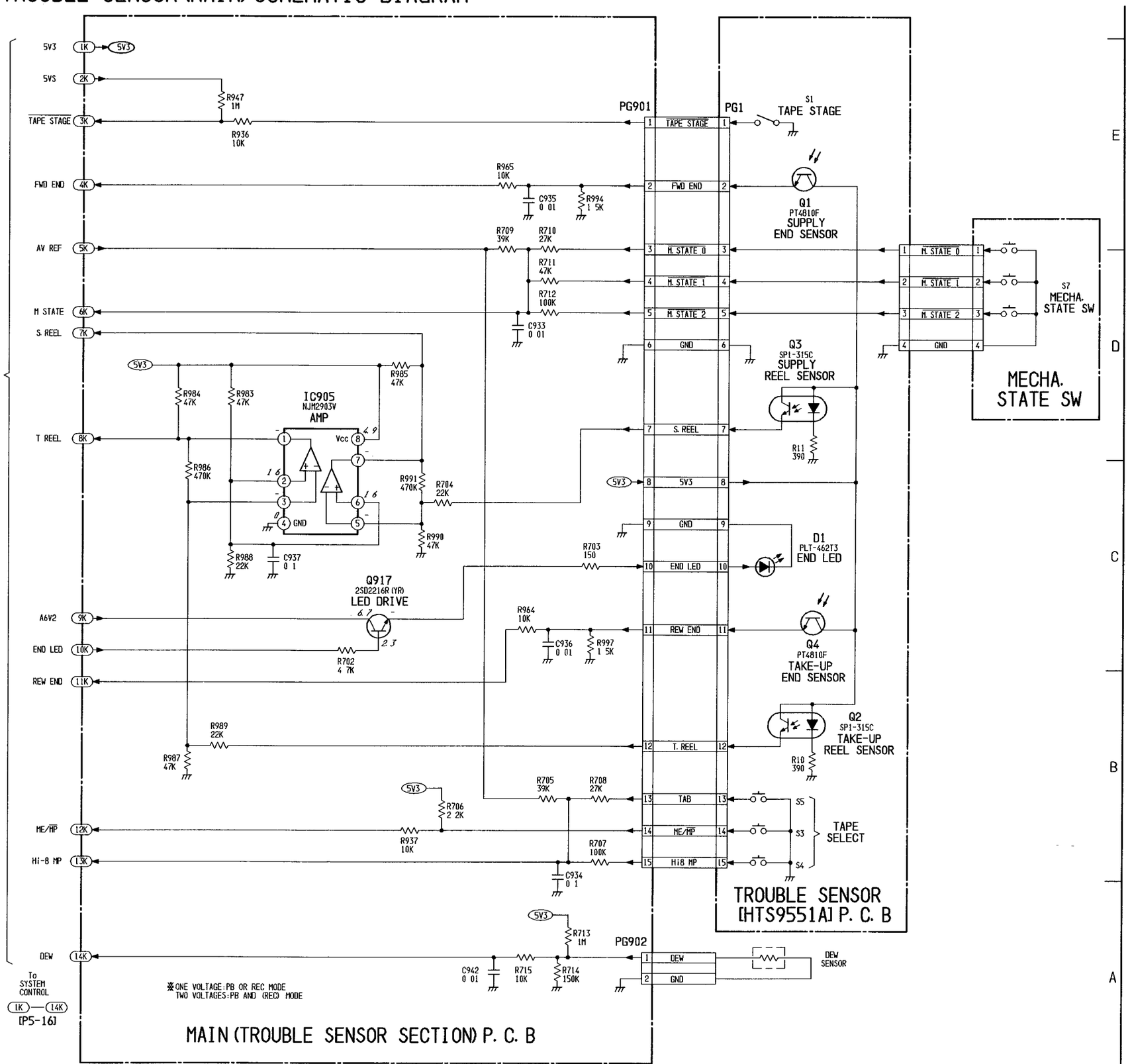
6-A IC901-70 5.0Vp-p
1V/200μ sec.cm
REC/PLAY



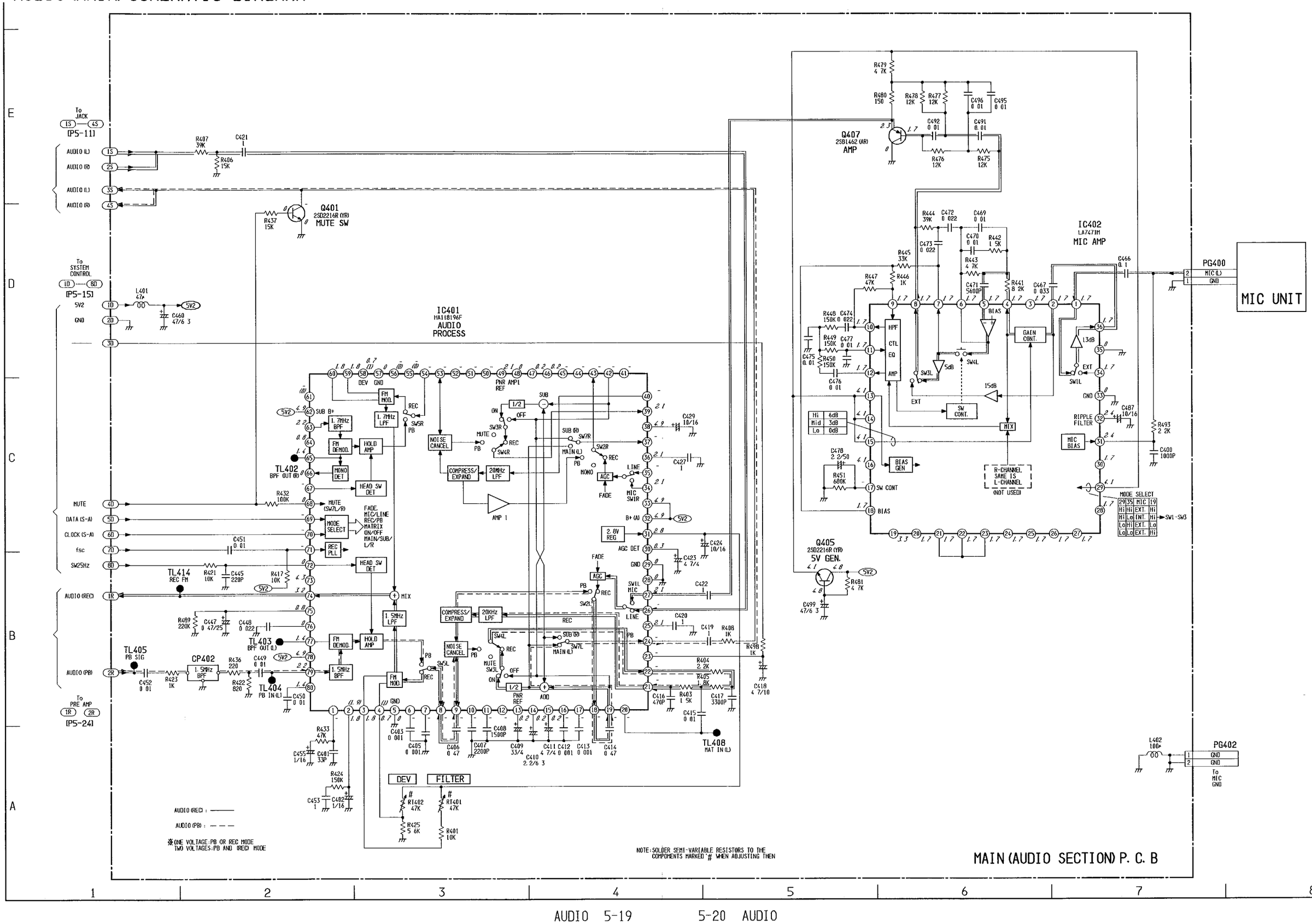
7-A IC901-87 5.3Vp-p
1V/20.0μ sec.cm
REC/PLAY



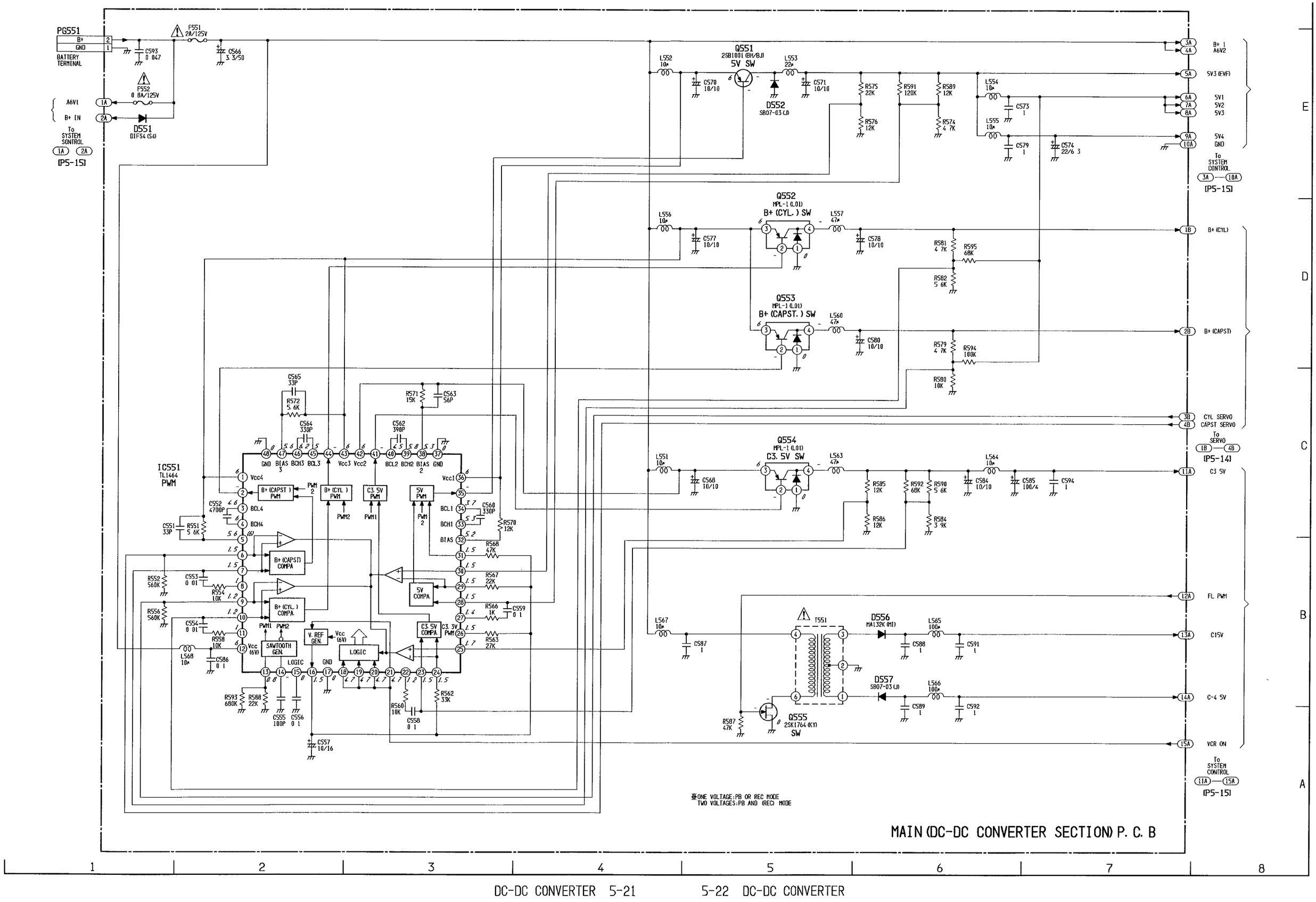
TROUBLE SENSOR (MAIN) SCHEMATIC DIAGRAM



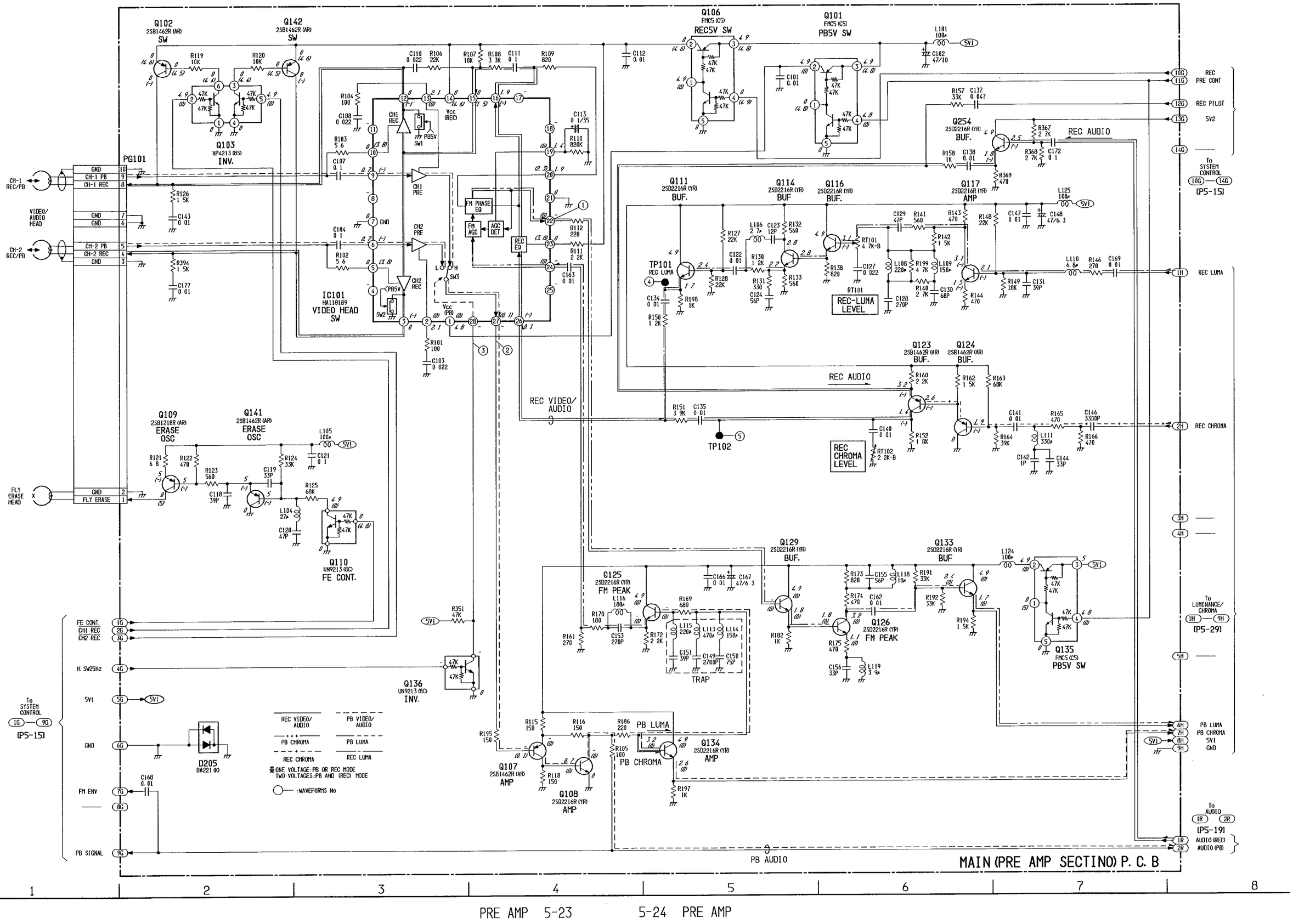
AUDIO (MAIN) SCHEMATIC DIAGRAM



DC-DC CONVERTER (MAIN) SCHEMATIC DIAGRAM



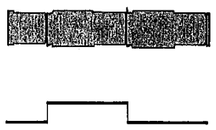
PRE AMP (MAIN) SCHEMATIC DIAGRAM



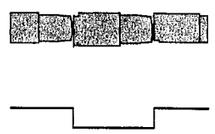
PRE AMP 5-23 5-24 PRE AMP

PRE AMP WAVEFORMS

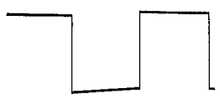
1-B IC101-22 350mVp-p
0.2V/5 0msec cm
PLAY



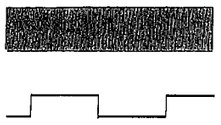
2-B IC101-27 200mVp-p
0.1V/5.0msec.cm
PLAY



3-A IC101-28 2.2Vp-p
0.5V/5.0msec.cm
REC/PLAY



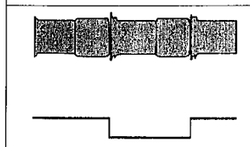
4-A TP101 210mVp-p
0.1V/5 0msec cm
REC



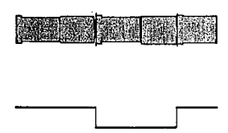
5-A TP102 140mVp-p
50mV/20.0μ sec.cm
REC

LUMINANCE/CHROMA WAVEFORMS

1-B IC201-8 400mVp-p
0 2V/5 0msec.cm
PLAY

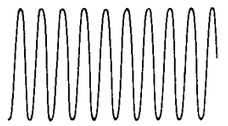


2-B IC201-10 300mVp-p
0 2V/5.0msec cm
PLAY

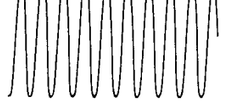


3-A IC201-13 300mVp-p
0 1V/20.0μ sec.cm
REC

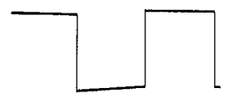
4-A IC201-19 330mVp-p
0.1V/100nsec.cm
REC/PLAY



5-A IC201-22 420mVp-p
0 1V/200nsec cm
REC/PLAY

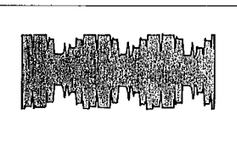


6-A IC201-27 2.0Vp-p
0.5V/5.0msec cm
REC/PLAY

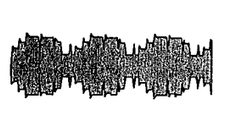


7-A IC201-36 100mVp-p
50mV/20 0μ sec cm
REC

7-B IC201-36 180mVp-p
50mV/20.0μ sec cm
PLAY



8-A IC201-38 160mVp-p
50mV/20.0μ sec.cm
REC



8-B IC201-38 300mVp-p
0.1V/20.0μ sec.cm
PLAY

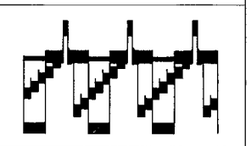
9-A IC201-47 5.0Vp-p
1V/20 0μ sec.cm
REC/PLAY

10-A IC201-49 1Vp-p
0 2V/20.0μ sec.cm
REC

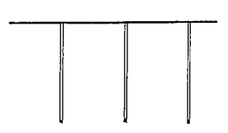
11-A IC201-53 300mVp-p
0 1V/20.0μ sec cm
REC/PLAY

12-A IC201-54 550mVp-p
0.1V/20.0μ sec.cm
REC/PLAY

13-A IC203-3 550mVp-p
0 1V/20.0μ sec.cm
REC/PLAY



14-A IC204-4 5 0Vp-p
1V/5 0msec cm
REC/PLAY

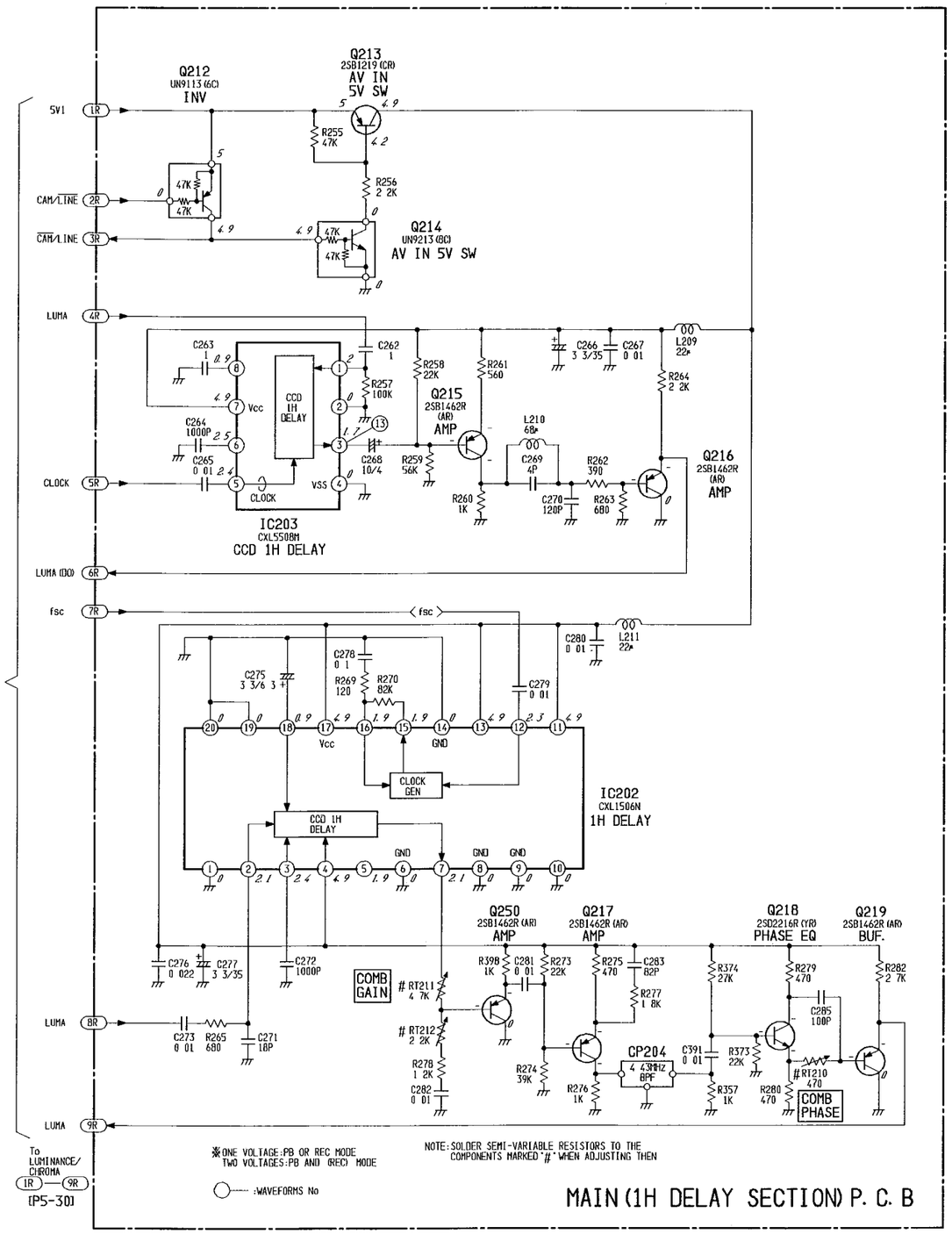


15-A IC204-10 1.9Vp-p
0.5V/20.0μ sec cm
REC/PLAY

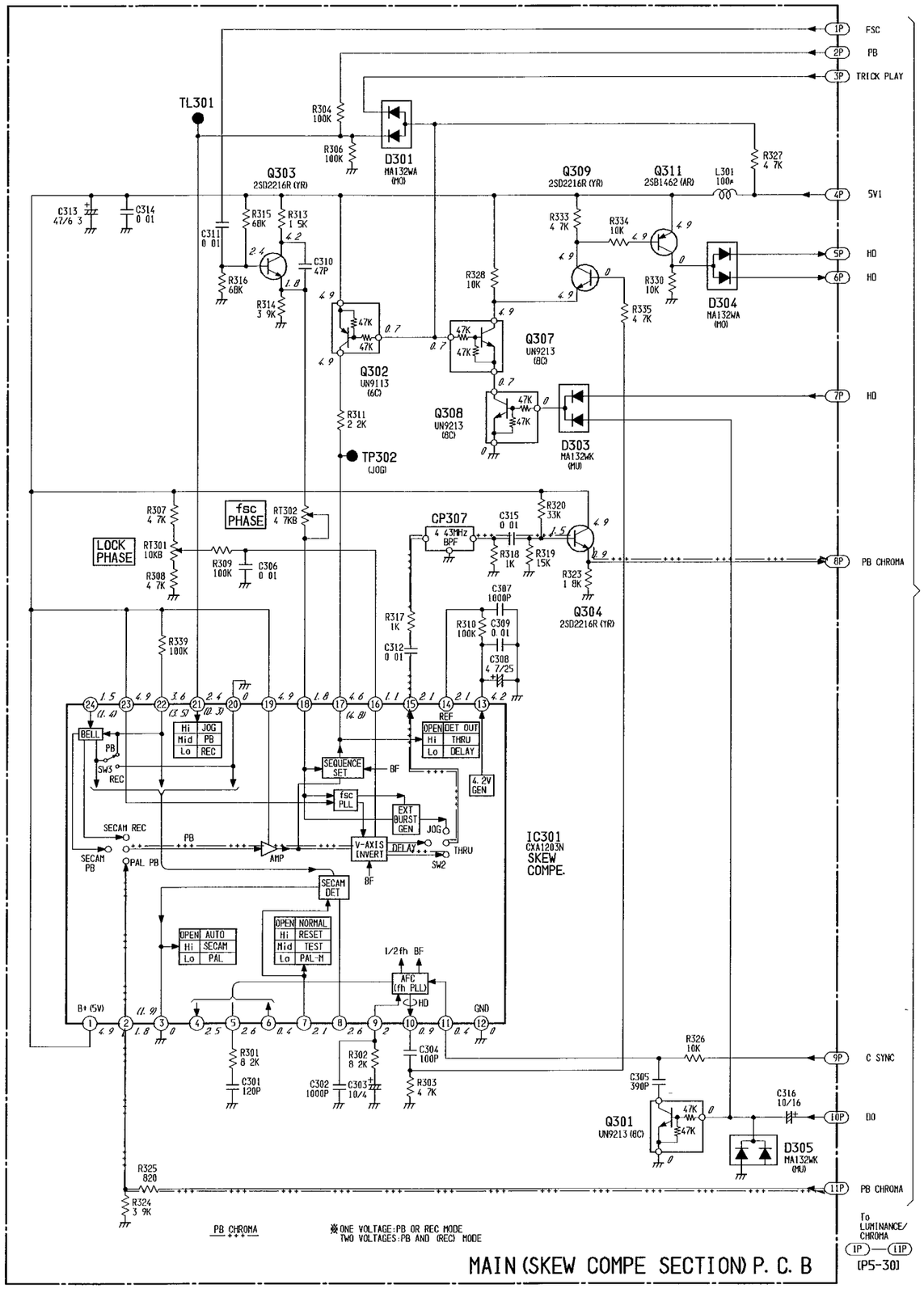
16-A IC204-15 970mVp-p
0 2V/20.0μ sec cm
REC/PLAY

17-A TP205 310mVp-p
0 1V/20 0μ sec cm
REC

1H DELAY (MAIN) SCHEMATIC DIAGRAM

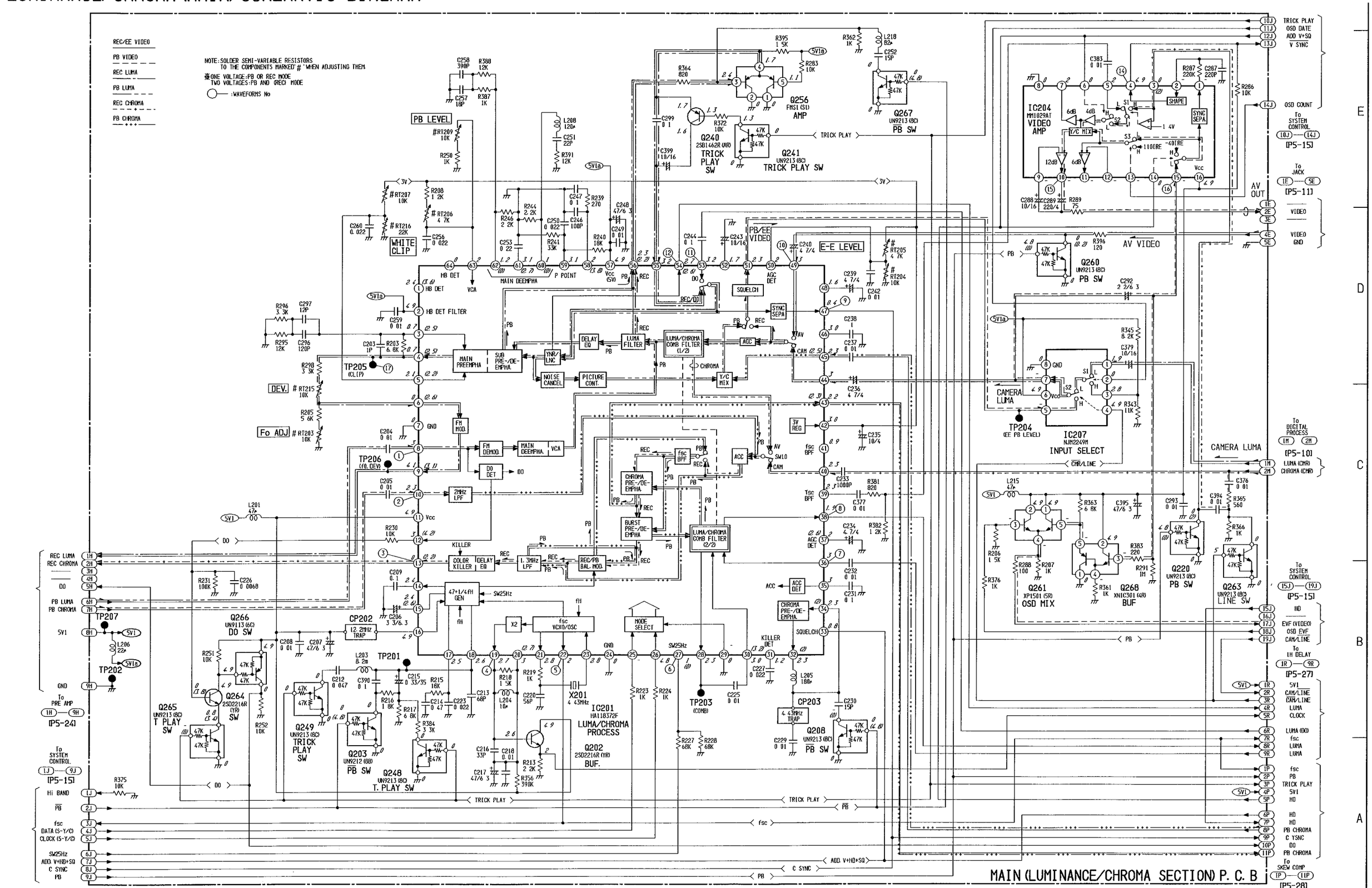


SKEW COMPE (MAIN) SCHEMATIC DIAGRAM

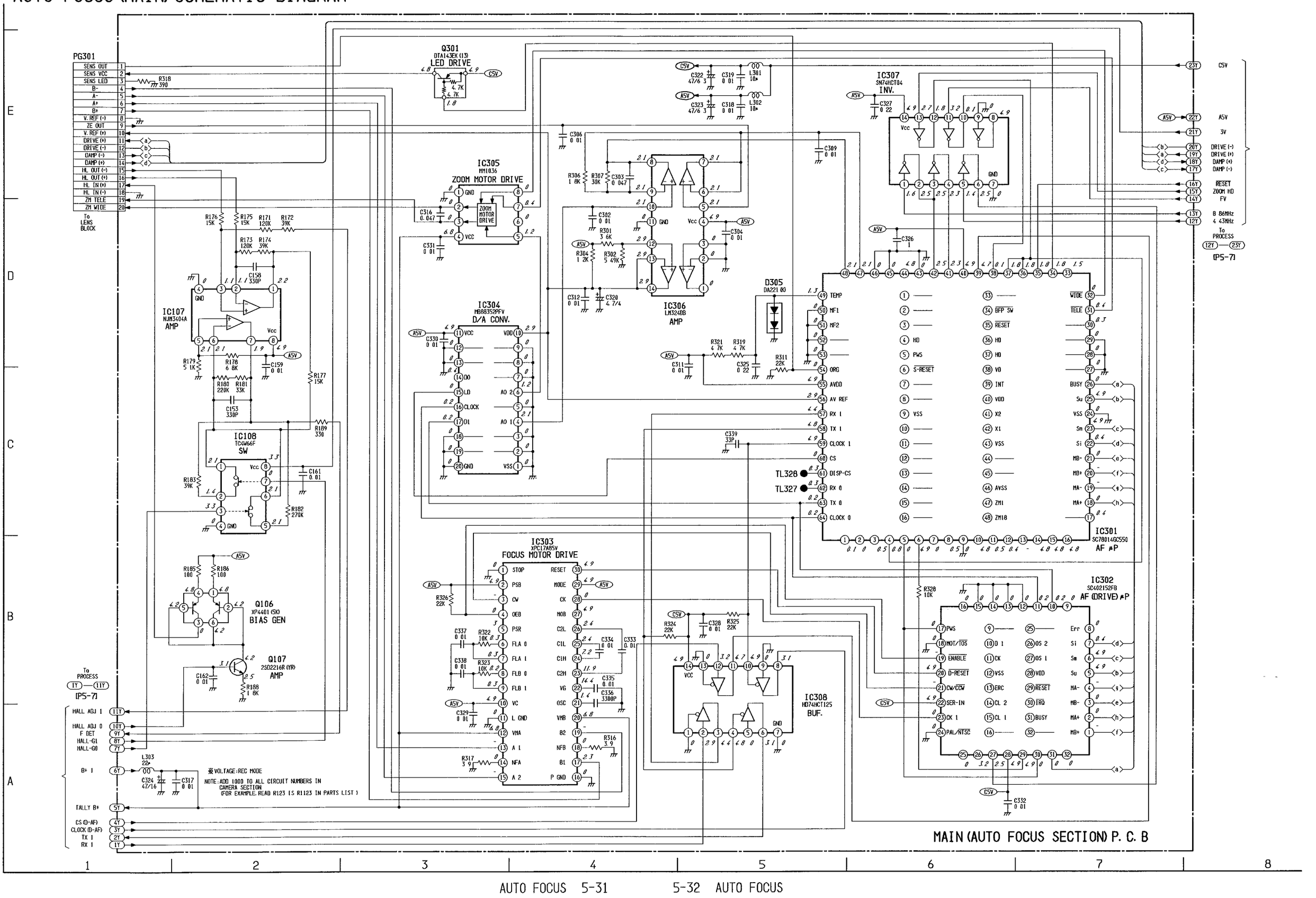


1 2 3 4 5 6 7 8

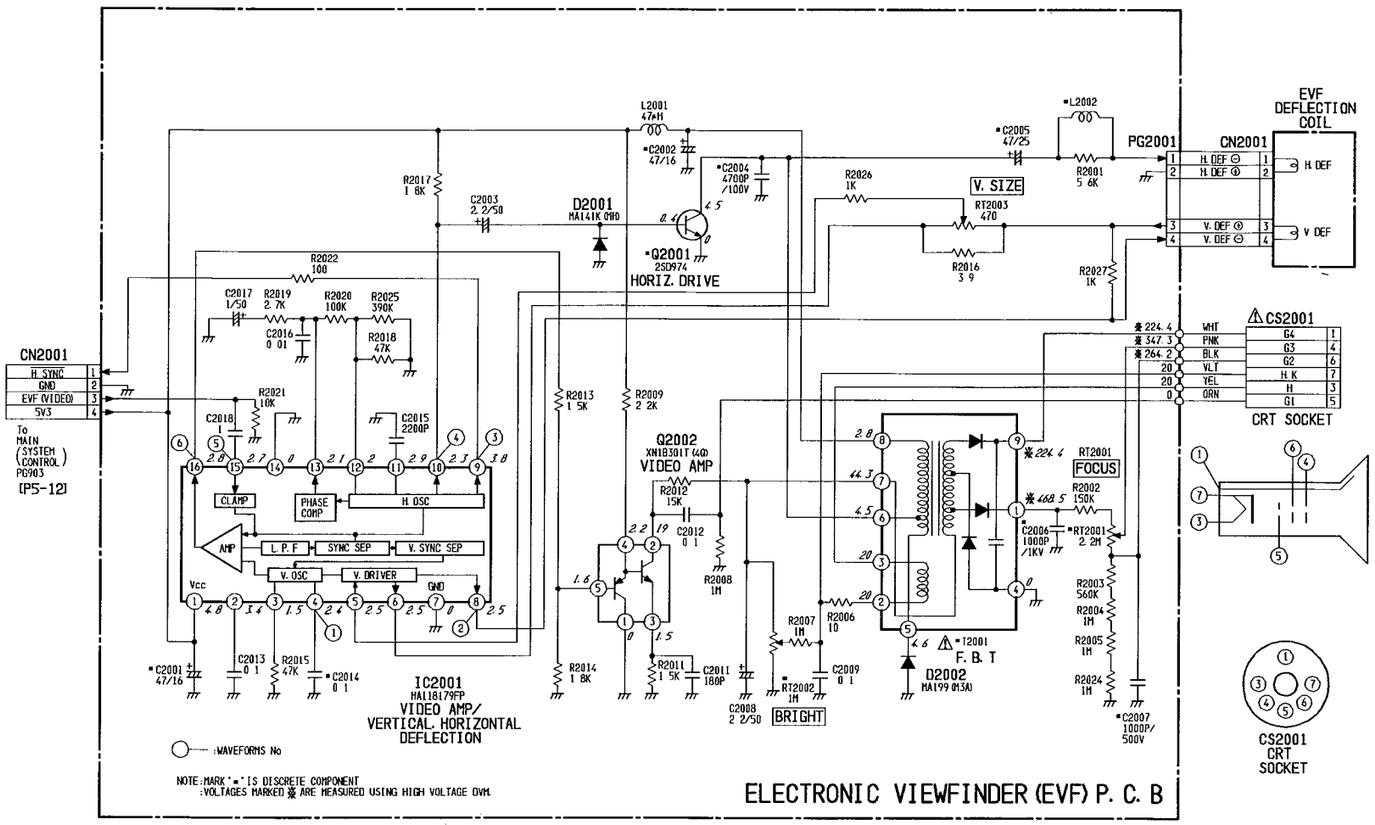
LUMINANCE/CHROMA (MAIN) SCHEMATIC DIAGRAM



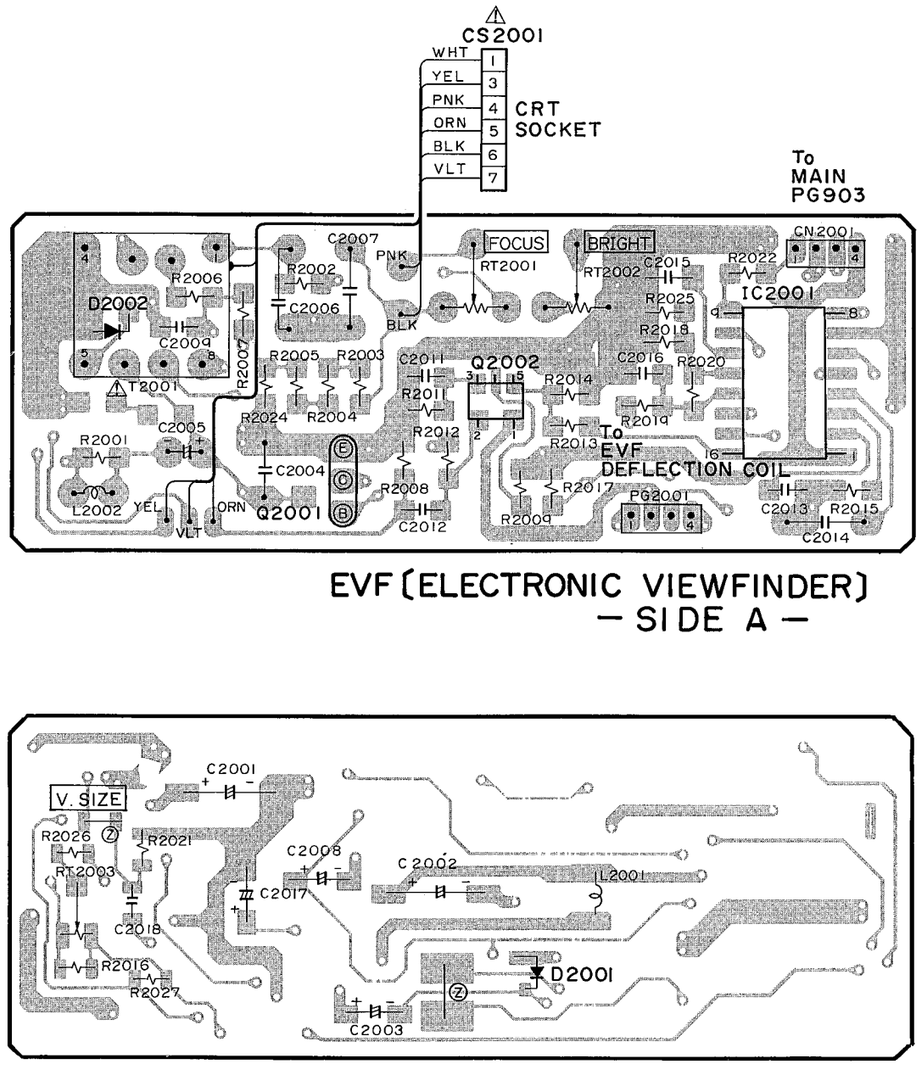
AUTO FOCUS (MAIN) SCHEMATIC DIAGRAM



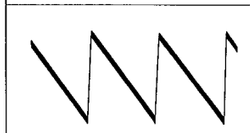
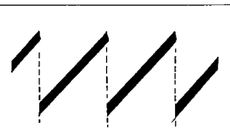
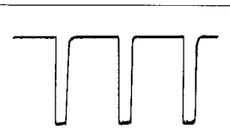
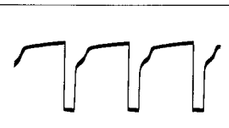
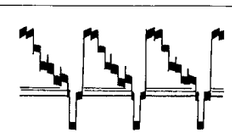
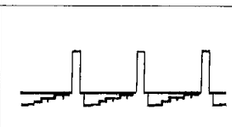
ELECTRONIC VIEWFINDER (EVF) SCHEMATIC DIAGRAM



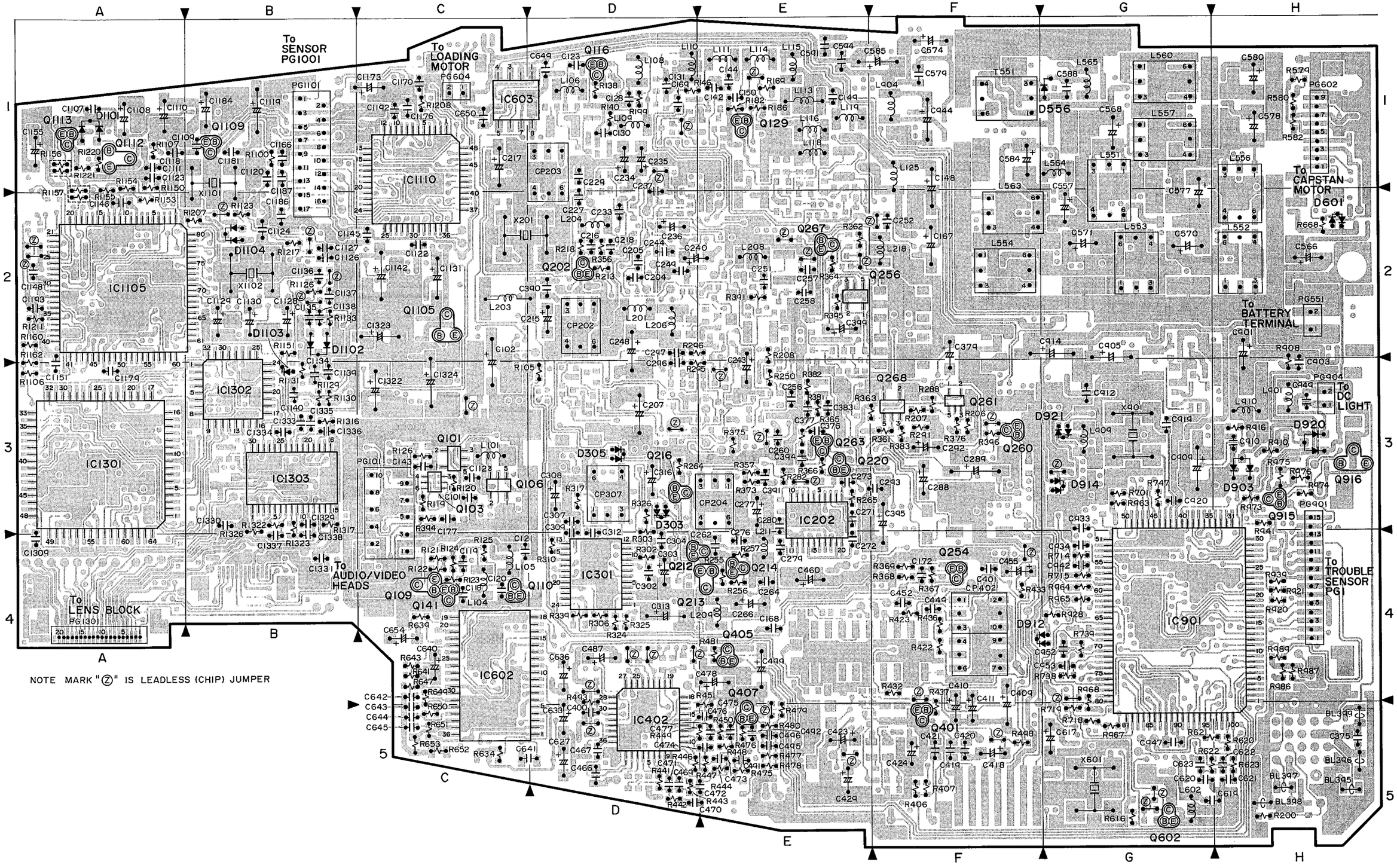
ELECTRONIC VIEWFINDER (EVF) CIRCUIT BOARD



ELECTRONIC VIEWFINDER (EVF) WAVEFORMS

1-A IC2001-4 950mVp-p 0.2V/5.0msec cm COLOR CHART	2-A IC2001-8 2.3Vp-p 0.5V/5 0msec cm COLOR CHART	3-A IC2001-9 5.0Vp-p 1V/20.0μ sec.cm COLOR CHART	4-A IC2001-10 1 7Vp-p 0.5V/20 0μ sec cm COLOR CHART	5-A IC2001-15 900mVp-p 0.2V/20.0μ sec.cm COLOR CHART	6-A IC2001-16 2.8Vp-p 1V/20 0μ sec cm COLOR CHART
					

MAIN CIRCUIT BOARD [SIDE-A]
[PATTERN No. 155135-5]



IDENTIFICATION OF PARTS LOCATION

MAIN

Symbol No.	Parts Location
BL	
BL394	B-5A
BL395	A-5H
BL396	A-5H
BL397	A-5H
BL398	A-5H
BL399	A-5H
C	
C101	A-3C
C102	A-2C
C103	B-4F
C104	B-4F
C107	B-3F
C108	B-3F
C110	B-3F
C111	B-3F
C112	A-3C
C113	B-3F
C118	A-4C
C119	A-4C
C120	A-4C
C121	A-4C
C122	B-1E
C123	A-1D
C124	B-1E
C127	B-1E
C128	A-1D
C129	B-1E
C130	A-1D
C131	A-1D
C134	B-1F
C135	B-1F
C137	B-1D
C138	B-1E
C140	B-1D
C141	B-1D
C142	A-1E
C143	A-3C
C144	A-1E
C146	B-1D
C147	B-1E
C148	A-1F
C149	A-1E
C150	A-1E
C151	B-1D
C153	B-1D
C155	B-1D
C156	B-1D
C162	B-2C
C163	B-4F
C166	B-2C
C167	A-2F
C168	A-4E
C169	A-1D
C172	A-4F
C177	A-3C
C203	B-2E
C204	A-2D
C205	A-2D
C206	B-2E
C207	A-3D
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C209	B-2E
C212	B-2F
C213	B-2E
C214	B-2E
C215	A-2D
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C218	A-2D
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C223	B-2E
C225	B-2E
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C252	A-2F
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C316	A-3D
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C395	A-3F
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C403	B-4C
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C408	B-4C
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C411	A-5F
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C422	B-5C
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C424	A-5F
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C611	B-5B
C617	A-5G
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C621	A-5H
C622	A-5H
C623	A-5G
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C904	B-3A
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C957	B-4A
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C1330	A-3B
C1331	A-4B
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C1333	A-3B
C1334	A-3B
C1335	A-3B
C1336	A-3B
C1337	A-4B
C1338	A-4B
C1339	B-3H
CP	
CP202	A-2D
CP203	A-1D
CP204	A-3E
CP307	A-3D
CP402	A-4F
CP1102	B-3G
D	
D205	B-1D
D301	B-4E
D303	A-3D
D304	B-3E
D305	A-3D
D551	B-2A
D552	B-2A
D556	A-1G
D557	B-1C
D601	A-2H
D903	A-3H
D912	A-4F
D913	B-4B
D914	A-3G
D916	B-4C
D920	A-3H
D921	A-3G
D922	B-4B
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D1102	A-2B
D1103	A-3B
D1104	A-2B
D1106	B-2F
D1107	B-2F
D1108	B-1F
D1109	B-1F
D1305	B-3H
F	
F551	B-2A
F552	B-2A
IC	
IC101	B-4F
IC201	B-2E
IC202	A-3E
IC203	B-4D
IC204	B-3C
IC207	B-2C
IC301	A-4D
IC401	B-4C
IC402	A-5D
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IC905	B-4A
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IC1104	B-2H
IC1105	A-2A
IC1106	B-2F
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IC1108	B-3H
IC1109	B-3G
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IC1302	A-3B
IC1303	A-3B
IC1304	B-4G
IC1305	B-4G
IC1306	B-4H
IC1307	B-3G
IC1308	B-3H
JK	
JK200	B-5A
L	
L101	A-3C
L104	A-4C
L105	A-4C
L106	A-1D
L108	A-1D
L109	A-1D
L110	A-1D
L111	A-1E
L113	A-1E
L114	A-1E
L115	A-1E
L116	A-1E
L118	A-1E
L119	A-1E
L124	B-2C
L125	A-1F
L201	A-2D
L203	A-2C
L204	A-2D
L205	B-1E
L206	A-2D
L208	A-2E
L209	A-4E
L210	B-3E
L211	A-4E
L215	B-3C
L218	A-2F
L301	B-4E
L401	B-4D
L402	B-5D
L551	A-1G
L552	A-2H
L553	A-2G
L554	A-2F
L555	B-2C
L556	A-2H
L557	A-1G
L560	A-1G
L563	A-2F
L564	A-1G
L565	A-1G
L566	B-1C
L567	B-1B
L568	B-2A
L602	A-5G
L901	A-3H
L902	B-3B
L903	B-2C
L904	A-1F
L907	B-3B
L909	A-3G
L910	A-3H
L1102	B-2F
L1103	B-2F
L1105	B-2F
L1106	B-1H
L1107	B-1F
L1108	B-1F
L1109	B-2G
L1301	B-3F
L1302	B-2F
L1303	B-3F
PG	
PG101	A-3C
PG400	B-5E
PG402	B-5D
PG551	A-2H
PG601	B-5C
PG602	A-1H
PG603	B-4F
PG604	A-1C
PG901	A-4H
PG902	B-5F
PG903	B-1C
PG904	A-3H
PG905	B-3C
PG906	B-1D
PG1101	A-1B
PG1301	A-4A
Q	
Q101	A-3C
Q102	B-3F
Q103	A-3C
Q106	A-3C
Q107	B-3F
Q108	B-3E
Q109	A-4C
Q110	A-4C
Q111	B-1E
Q114	B-1E
Q116	A-1D
Q117	B-1E
Q123	B-1D
Q124	B-1D
Q125	B-1D
Q126	B-1D
Q129	A-1E
Q133	B-2D
Q134	B-1D
Q135	B-2C
Q136	B-3E
Q141	A-4C
Q142	B-4F
Q202	A-2D
Q203	B-2E
Q208	B-1F
Q212	A-4D

IDENTIFICATION OF PARTS LOCATION

MAIN

Symbol No.	Parts Location
Q213	A-4E
Q214	A-4E
Q215	B-3D
Q216	A-3D
Q217	B-3D
Q218	B-3D
Q219	B-3D
Q220	A-3E
Q240	B-2D
Q241	B-2C
Q248	B-2F
Q249	B-2F
Q250	B-3D
Q254	A-4F
Q256	A-2E
Q260	A-3F
Q261	A-3F
Q263	A-3E
Q264	B-3E
Q265	B-3E
Q266	B-3E
Q267	A-2E
Q268	A-3F
Q301	B-4E
Q302	B-4E
Q303	B-4E
Q304	B-3E
Q307	B-4E
Q308	B-4E
Q309	B-3E
Q311	B-3E
Q401	A-5F
Q405	A-4E
Q407	A-5E
Q551	B-2A
Q552	B-1A
Q553	B-1B
Q554	B-2C
Q555	B-1C
Q602	A-5G
Q603	B-5B
Q605	B-4B
Q608	B-4F
Q901	B-3B
Q902	B-2A
Q903	B-3A
Q904	B-3A
Q905	B-3A
Q906	B-4B
Q907	B-4B
Q908	B-2A
Q912	B-4B
Q915	A-3H
Q916	A-3H
Q917	B-4A
Q1100	B-1H
Q1101	B-3G
Q1102	B-3G
Q1103	B-3F
Q1104	B-3F
Q1105	A-2C

Symbol No.	Parts Location
Q1106	B-3G
Q1107	B-3G
Q1109	A-1B
Q1110	B-1F
Q1112	A-1A
Q1113	A-1A
Q1301	B-4G
R	
R101	B-4F
R102	B-4F
R103	B-3F
R104	B-3F
R105	A-3D
R106	B-3F
R107	B-3F
R108	B-3F
R109	B-3F
R110	B-3F
R111	B-3F
R112	B-2F
R115	B-2F
R116	B-2F
R118	B-3F
R119	A-3C
R120	A-3C
R121	A-4C
R122	A-4C
R123	A-4C
R124	A-4C
R125	A-4C
R126	A-3C
R127	B-1E
R128	B-1E
R130	B-1E
R131	B-1E
R132	B-1E
R133	B-1E
R138	A-1D
R140	A-1D
R141	B-1E
R142	B-1E
R143	B-1E
R144	B-1E
R146	A-1D
R148	B-1E
R149	B-1E
R150	B-1F
R151	B-1F
R152	B-1D
R157	B-1E
R158	B-1E
R160	B-1E
R161	B-1D
R162	B-1D
R163	B-1D
R164	B-1D
R165	B-1D
R166	B-1D
R169	A-1E
R170	B-1D
R172	B-1D

Symbol No.	Parts Location
R173	B-1D
R174	B-1D
R175	B-1D
R182	A-1E
R186	A-1E
R191	B-2C
R192	B-2C
R194	B-2D
R195	B-3F
R197	B-1D
R198	B-1E
R199	A-1D
R200	A-5H
R203	B-2E
R205	B-3E
R206	A-3F
R207	A-3F
R208	A-2E
R213	A-2D
R215	B-2E
R216	B-2E
R217	B-2E
R218	A-2D
R219	B-2E
R223	B-2F
R224	B-2E
R227	B-2F
R228	B-2F
R230	B-3E
R231	B-3E
R239	B-2D
R240	B-2D
R241	B-2D
R244	B-2D
R246	B-2D
R250	A-3E
R251	B-3E
R252	B-3E
R255	A-4E
R256	A-4E
R257	A-4E
R258	B-3D
R259	B-3D
R260	B-3D
R261	B-3D
R262	B-3D
R263	B-3D
R264	A-3D
R265	A-3E
R269	B-4D
R270	B-4D
R273	B-3D
R274	B-3D
R275	B-3D
R276	B-3D
R277	B-3D
R278	B-4C
R279	B-3D
R280	B-3D
R282	A-3E
R283	B-2C

Symbol No.	Parts Location
R286	B-3C
R287	B-3D
R288	A-3F
R289	B-3C
R291	A-3F
R295	A-3D
R296	A-2D
R298	B-3D
R301	B-4E
R302	A-4D
R303	A-4D
R304	B-3E
R306	A-4D
R307	B-4E
R308	B-4E
R309	B-4E
R310	A-4D
R311	B-4E
R313	B-4E
R314	B-4E
R315	B-4E
R316	B-4E
R317	A-3D
R318	B-3E
R319	B-3E
R320	B-3E
R323	B-3E
R324	A-4D
R325	A-4D
R326	A-3D
R327	B-4E
R328	B-3E
R330	B-3E
R333	B-3E
R334	B-3E
R335	B-4E
R339	A-4D
R343	B-3C
R345	B-3C
R351	B-2E
R356	A-2D
R357	A-3E
R361	A-3F
R362	A-2E
R363	A-3E
R364	A-2E
R365	A-3E
R366	A-3E
R367	A-4F
R368	A-4F
R369	A-4F
R372	B-2D
R373	A-3E
R374	B-3D
R375	A-3E
R376	A-3F
R381	A-3E
R382	A-3E
R383	A-3F
R384	B-2E
R387	A-2E

Symbol No.	Parts Location
R388	A-2E
R391	A-2E
R394	A-3C
R395	A-2E
R396	A-3F
R398	B-3D
R401	B-4C
R403	B-5C
R404	B-5C
R405	B-5C
R406	A-5F
R407	A-5F
R408	B-5C
R417	B-4C
R421	B-4C
R422	A-4F
R423	A-4F
R424	B-4C
R425	B-4C
R432	A-4F
R433	A-4F
R436	A-4F
R437	A-5F
R441	A-5D
R442	A-5D
R443	A-5D
R444	A-5E
R445	B-5E
R446	A-5D
R447	A-5E
R448	A-5E
R449	A-5D
R450	A-5E
R451	A-5E
R475	A-5E
R476	A-5E
R477	A-5E
R478	A-5E
R479	A-5E
R480	A-5E
R481	A-4E
R489	B-4C
R493	A-4D
R498	A-5F
R551	B-1B
R552	B-1B
R554	B-1A
R556	B-1B
R558	B-2A
R560	B-2B
R562	B-2B
R563	B-2B
R566	B-2B
R567	B-2B
R568	B-2B
R570	B-2B
R571	B-1B
R572	B-1B
R574	B-2C
R575	B-2C
R576	B-2C

Symbol No.	Parts Location
R579	A-1H
R580	A-1H
R581	B-1A
R582	A-1H
R584	B-1B
R585	B-1B
R586	B-1B
R587	B-1B
R588	B-2B
R589	B-2C
R590	B-1C
R591	B-2C
R592	B-1C
R593	B-2B
R594	B-1A
R595	B-1A
R605	B-4B
R606	B-4B
R607	B-5B
R609	B-5B
R610	B-5B
R611	B-5B
R616	A-5G
R620	A-5H
R621	A-5G
R622	A-5G
R623	A-5H
R624	B-5A
R625	B-5A
R626	B-5A
R634	A-5C
R635	B-4E
R637	B-4F
R639	A-4C
R641	A-4C
R643	A-4C
R644	B-4F
R645	B-4F
R646	B-4F
R647	A-4C
R648	B-5F
R649	A-4C
R650	A-5C
R651	A-5C
R652	A-5C
R653	A-5C
R656	B-1F
R658	B-4F
R659	B-5B
R663	B-4F
R668	A-2H
R680	B-1F
R701	A-3G
R702	B-4A
R703	B-4A
R704	B-4A
R705	B-4A
R706	B-4A
R707	B-3A
R708	B-4A
R709	B-4A

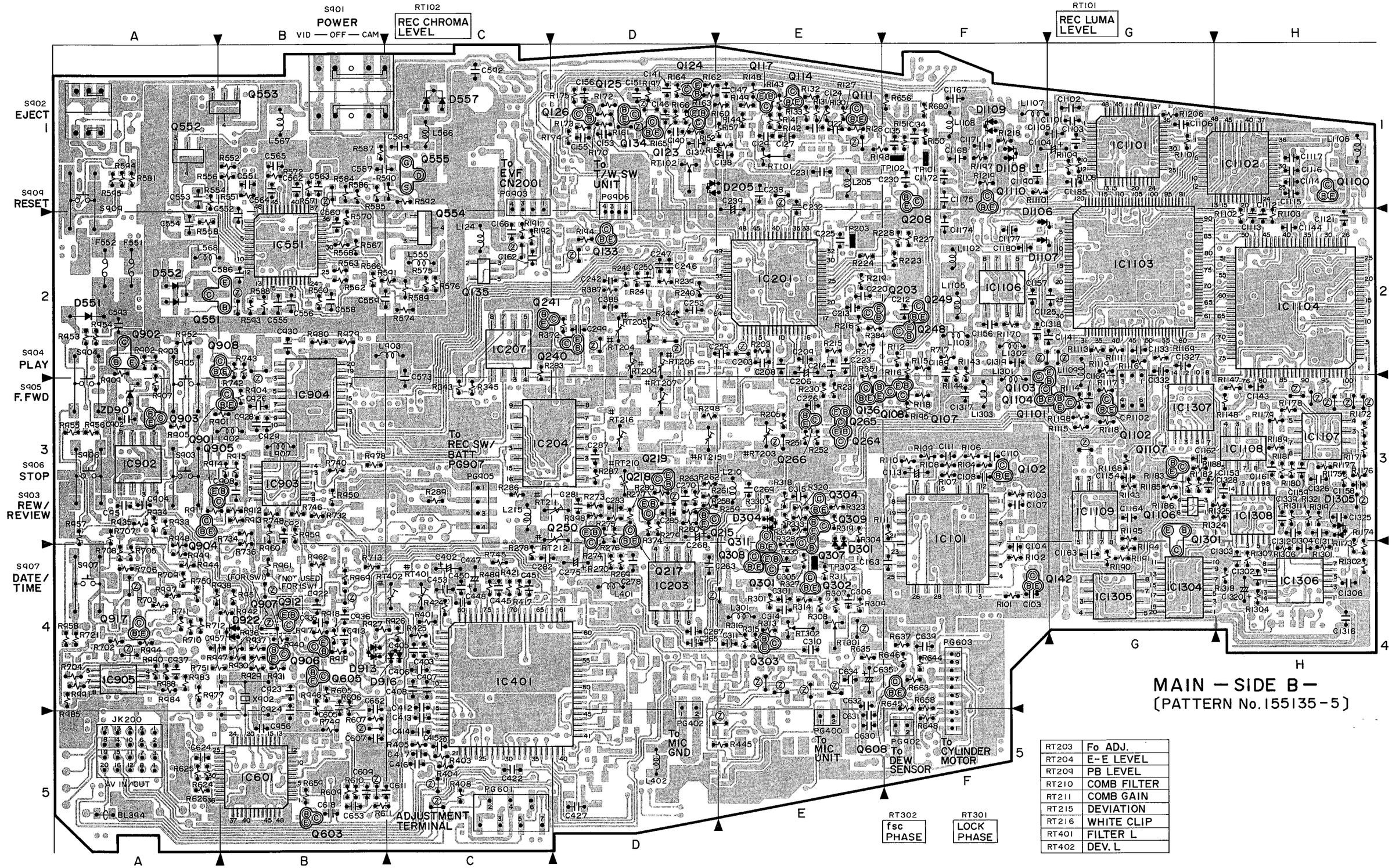
Symbol No.	Parts Location
R710	B-4A
R711	B-4A
R712	B-4A
R713	B-4B
R714	A-4G
R715	A-4G
R717	B-2F
R718	A-5G
R719	A-5G
R721	B-4A
R732	B-3B
R734	B-3B
R736	B-3B
R738	A-4G
R739	A-4G
R740	B-3B
R742	B-2B
R743	B-2B
R745	B-4C
R746	B-3B
R747	A-3G
R748	B-3B
R749	B-5B
R750	B-4A
R751	B-4A
R901	B-3B
R902	B-2A
R903	B-2A
R904	B-3B
R905	B-3A
R907	B-3A
R908	A-3H
R909	B-2A
R910	A-3H
R911	B-3A
R912	B-3B
R913	B-3B
R914	B-3B
R915	B-3B
R916	A-3H
R917	B-4B
R918	B-4B
R919	B-4B
R920	A-4H
R921	A-4H
R926	B-4C
R927	B-4B
R928	A-4G
R929	B-4B
R930	B-4B
R931	B-4B
R933	B-3A
R934	B-3A
R935	B-3A
R936	B-4B
R937	B-4B
R938	B-4A
R939	A-4H
R940	B-4B
R941	A-3H
R942	B-4B

Symbol No.	Parts Location
R944	B-4A
R946	B-5B
R947	B-4B
R948	B-4A
R949	B-4A
R950	B-3B
R951	B-4B
R952	B-2A
R953	B-2A
R954	B-2A
R955	B-3A
R956	B-3A
R957	B-3A
R958	B-4A
R959	B-3B
R960	B-3B
R961	B-4B
R962	B-4B
R963	A-3G
R964	A-4G
R965	A-4G
R967	A-5G
R968	A-4G
R969	B-4B
R973	A-3H
R974	A-3H
R975	A-3H
R976	A-3H
R977	B-4A
R978	B-3B
R979	B-2B
R980	B-2B
R983	B-4A
R984	B-4A
R985	B-4A
R986	A-4H
R987	A-4H
R988	B-4A
R989	A-4H
R990	B-4A
R991	B-4A
R994	B-4A
R997	B-4A
R1100	A-1B
R1101	B-1G
R1102	B-2H
R1103	B-2H
R1106	A-3A
R1107	A-1A
R1108	B-1G
R1109	B-1G
R1110	B-1F
R1111	B-2G
R1113	B-2G
R1114	B-3G
R1115	B-3G
R1116	B-2G
R1117	B-3G
R1118	B-3G
R1119	B-2G
R1123	A-2B

Symbol No.	Parts Location
R1126	A-2B
R1129	A-3B
R1130	A-3B
R1131	A-3B
R1133	A-2B
R1143	B-2F
R1144	B-3F
R1147	B-3H
R1148	B-3H
R1150	A-1A
R1151	A-2B
R1153	A-2A
R1154	A-1A
R1155	A-1A
R1156	A-1A
R1157	A-2A
R1160	A-2A
R1162	A-3A
R1168	B-3G
R1169	B-2G
R1170	B-2F
R1171	B-3H
R1172	B-3H
R1173	B-4H
R1174	B-4H
R1175	B-3H
R1176	B-3H
R1177	B-3H
R1178	B-3H
R1179	B-3H
R1180	B-3H
R1181	B-3H
R1182	B-3G
R1183	B-3G
R1185	B-3G
R1186	B-3G
R1188	B-3G
R1189	B-3H
R1190	B-4G
R1191	B-4G
R1193	B-3G
R1194	B-4G
R1195	B-3G
R1197	B-1F
R1198	B-3G
R1206	B-1G
R1207	A-2B
R1208	A-1C
R1211	A-2A
R1217	A-2B
R1218	B-1F
R1219	B-1F
R1220	A-1A
R1221	A-1A
R1301	B-4H
R1302	B-4H
R1304	B-4H
R1306	B-4H
R1307	B-4H
R1311	B-3H
R1316	A-3B

Symbol No.	Parts Location
R1317	A-3B
R1318	B-4H
R1319	B-3H
R1321	B-3H
R1322	A-3B
R1323	A-3B
R1324	B-3H
R1325	B-3H
R1326	A-3B
RT	
RT101	B-1E
RT102	B-1D
RT203	B-3E
RT204	B-2D
RT205	B-2D
RT206	B-2D
RT207	B-3D
RT209	B-2D
RT210	B-3D
RT211	B-3D
RT212	B-3D
RT215	B-3D
RT216	B-3D
RT301	B-4E
RT302	B-4E
RT401	B-4C
RT402	B-4C
S	
S901	B-1B
S902	B-1A
S903	B-3A
S904	B-2A
S905	B-2A
S906	B-3A
S907	B-4A
S909	B-1A
T	
T551	A-1F
TL	
TL408	B-5C
TL1175	B-1F
TP	
TP101	B-1F
TP102	B-1F
TP203	B-2E
TP205	B-3E
TP206	B-2D
TP302	B-4E
X	
X201	A-2C
X601	A-5G
X901	A-3G
X902	B-4B
X1101	A-1B
X1102	A-2B
ZD	
ZD901	B-3A

MAIN CIRCUIT BOARD [SIDE-B]
[PATTERN No. 155135-5]



MAIN — SIDE B —
[PATTERN No. 155135-5]

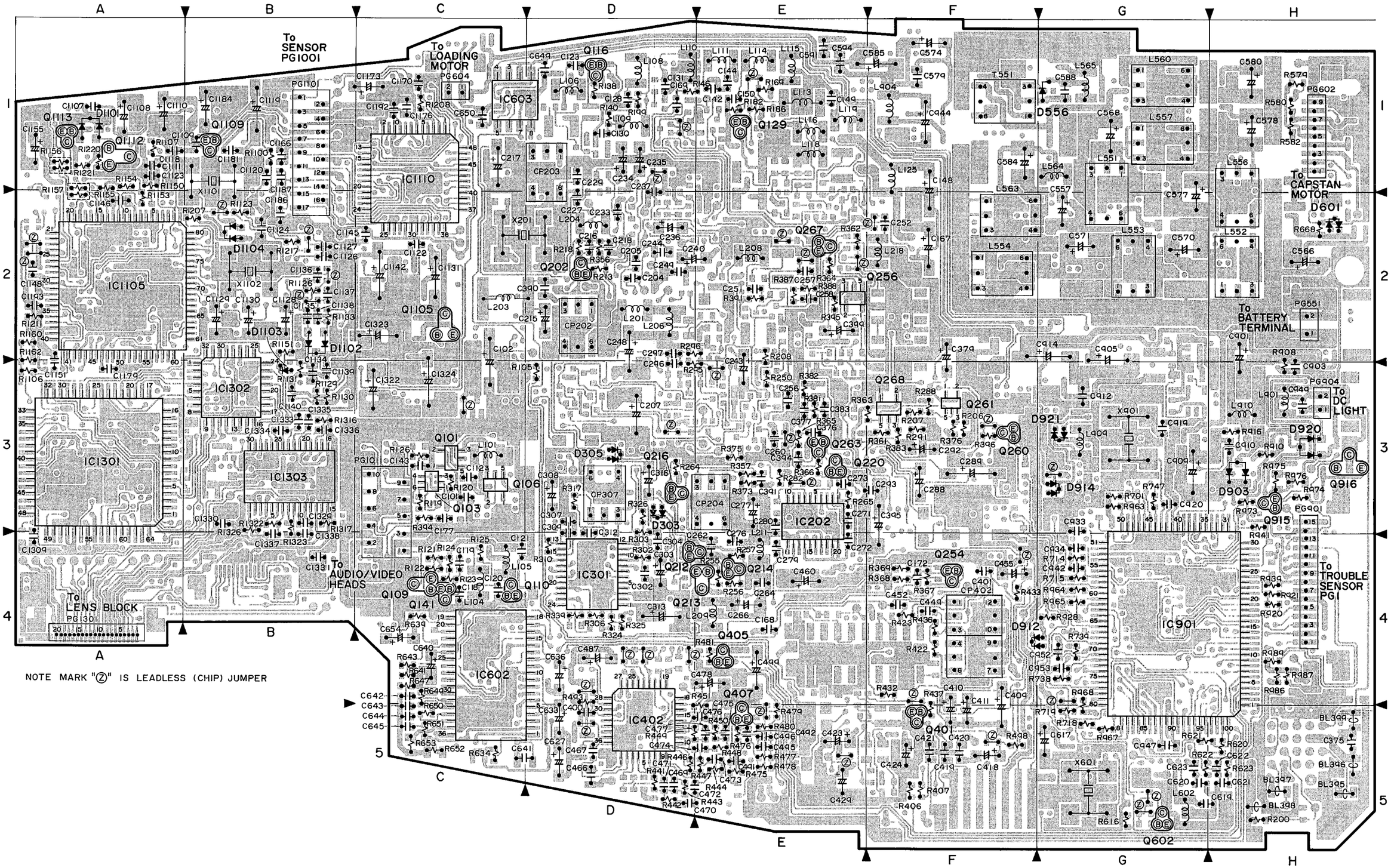
RT203	Fo ADJ.
RT204	E-E LEVEL
RT209	PB LEVEL
RT210	COMB FILTER
RT211	COMB GAIN
RT215	DEVIATION
RT216	WHITE CLIP
RT401	FILTER L
RT402	DEV. L

RT302 fsc PHASE

RT301 LOCK PHASE

NOTE MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.
: SOLDER SEMI-VARIABLE RESISTORS TO THE COMPONENTS MARKED "#" WHEN ADJUSTING THEM.

MAIN CIRCUIT BOARD [SIDE-A]
[PATTERN No. 155135-6]



MAIN — SIDE A —
[PATTERN No.155135-6]

IDENTIFICATION OF PARTS LOCATION

MAIN

Symbol No.	Parts Location
BL	
BL394	B-5A
BL395	A-5H
BL396	A-5H
BL397	A-5H
BL398	A-5H
BL399	A-5H
C	
C101	A-3C
C102	A-2C
C103	B-4F
C104	B-4F
C107	B-3F
C108	B-3F
C110	B-3F
C111	B-3F
C112	A-3C
C113	B-3F
C118	A-4C
C119	A-4C
C120	A-4C
C121	A-4C
C122	B-1E
C123	A-1D
C124	B-1E
C127	B-1E
C128	A-1D
C129	B-1E
C130	A-1D
C131	A-1D
C134	B-1F
C135	B-1F
C137	B-1D
C138	B-1E
C140	B-1D
C141	B-1D
C142	A-1E
C143	A-3C
C144	A-1E
C146	B-1D
C147	B-1E
C148	A-1F
C149	A-1E
C150	A-1E
C151	B-1D
C153	B-1D
C155	B-1D
C156	B-1D
C162	B-2C
C163	B-4F
C166	B-2C
C167	A-2F
C168	A-4E
C169	A-1D
C172	A-4F
C177	A-3C
C203	B-2E
C204	A-2D
C205	A-2D
C206	B-2E
C207	A-3D
C208	B-2E
C209	B-2E
C212	B-2F
C213	B-2E
C214	B-2E
C215	A-2D
C216	A-2D
C217	A-1C
C218	A-2D
C220	B-2E
C223	B-2E
C225	B-2E
C226	B-3E
C227	A-2D
C229	A-1D
C230	B-1F
C231	B-1E
C232	B-1E
C233	A-2D
C234	A-1D
C235	A-1D
C236	A-2D
C237	A-1D
C238	B-1E
C239	B-1E
C240	A-2D
C242	B-2D
C243	A-3E
C244	A-2D
C246	B-2D
C247	B-2D
C248	A-2D
C249	A-2D
C250	B-2D
C251	A-2E
C252	A-2F
C253	B-2D
C256	A-3E
C257	A-2E
C258	A-2E
C259	B-2E
C260	A-3E
C262	A-4E
C263	B-4D
C264	A-4E
C265	B-4D
C266	A-4E
C267	B-4D
C268	B-3D
C269	B-3E
C270	B-3D
C271	A-3E
C272	A-4E
C273	A-3E
C275	B-4D
C276	A-4E
C277	A-3E
C278	B-4D
C279	A-4E
C280	A-3E
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C285	B-3D
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C289	A-3F
C292	A-3F
C293	A-3F
C296	A-3D
C297	A-2D
C299	B-2D
C301	B-4E
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C303	A-4D
C304	A-4D
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C312	A-4D
C313	A-4D
C314	B-4E
C315	B-3E
C316	A-3D
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C377	A-3E
C379	A-2F
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C395	A-3F
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C405	B-4C
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C408	B-4C
C409	A-5F
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C412	B-4C
C413	B-5C
C414	B-5C
C415	B-5C
C416	B-5C
C417	B-5C
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C422	B-5C
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C424	A-5F
C427	B-5D
C429	A-5E
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C448	B-4C
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C565	B-1B
C566	A-2H
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C573	B-3C
C574	A-1F
C577	A-2G
C578	A-1H
C579	A-1F
C580	A-1H
C584	A-1F
C585	A-1F
C586	B-2B
C587	B-1B
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C589	B-1C
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C592	B-1C
C593	B-2A
C594	A-1E
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C617	A-5G
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C904	B-3A
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C912	A-3G
C913	B-4B
C914	A-2G
C919	A-3G
C920	A-3G
C921	B-3B
C922	B-4B
C923	B-4B
C924	B-5B
C926	B-3B
C928	B-3B
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C934	A-4G
C935	B-4B
C936	B-4B
C937	B-4A
C942	A-4G
C944	A-1F
C947	A-5G
C949	A-3H
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C956	B-5B
C957	B-4A
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C1102	B-1G
C1103	B-1G
C1104	B-1G
C1105	B-1G
C1106	B-1G
C1107	A-1A
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C1109	A-1B
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C1111	A-1A
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C1113	B-2H
C1114	B-1H
C1115	B-1H
C1116	B-1H
C1117	B-1H
C1118	A-1A
C1119	A-1B
C1120	A-1B
C1121	B-2H
C1122	A-2C
C1123	A-1A
C1124	A-2B
C1125	B-2G
C1126	A-2B
C1127	A-2B
C1128	A-2B
C1129	A-2B
C1130	A-2B
C1131	A-2C
C1133	B-2G
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C1136	A-2B
C1137	A-2B
C1138	A-2B
C1139	A-3B
C1140	A-3B
C1141	B-2G
C1142	A-2C
C1143	B-3H
C1144	B-2H
C1145	A-2C
C1146	A-2A
C1148	A-2A
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C1157	B-2F
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C1159	B-3H
C1161	B-3H
C1162	B-3G
C1163	B-4G
C1164	B-3G
C1166	A-1B
C1167	B-1F
C1168	B-1F
C1169	B-3G
C1170	A-1C
C1171	B-1F
C1172	B-1F
C1173	A-1C
C1174	B-2F
C1175	B-1F
C1176	A-1C
C1177	B-2F
C1179	A-3A
C1180	B-2F
C1181	A-1B
C1184	A-1B
C1185	B-1G
C1186	A-2B
C1187	A-1B
C1189	B-2F
C1190	B-1F
C1192	A-1C
C1193	A-2A
C1302	B-4H
C1303	B-4H
C1304	B-4H
C1306	B-4H
C1309	A-4A
C1311	B-3H
C1312	B-3H
C1316	B-4H
C1317	B-3F
C1318	B-2F
C1319	B-2F
C1320	B-4H
C1322	A-3C
C1323	A-2C
C1324	A-3C
C1325	B-3H
C1326	B-3H
C1327	B-2G
C1328	B-3H
C1329	A-3B
C1330	A-3B
C1331	A-4B
C1332	B-2G
C1333	A-3B
C1334	A-3B
C1335	A-3B
C1336	A-3B
C1337	A-4B
C1338	A-4B
C1339	B-3H
CP	
CP202	A-2D
CP203	A-1D
CP204	A-3E
CP307	A-3D
CP402	A-4F
CP1102	B-3G
D	
D205	B-1D
D301	B-4E
D303	A-3D
D304	B-3E
D305	A-3D
D551	B-2A
D552	B-2A
D556	A-1G
D557	B-1C
D601	A-2H
D903	A-3H
D912	A-4F
D913	B-4B
D914	A-3G
D916	B-4C
D920	A-3H
D921	A-3G
D922	B-4B
D1101	A-1A
D1102	A-2B
D1103	A-3B
D1104	A-2B
D1106	B-2F
D1107	B-2F
D1108	B-1F
D1109	B-1F
D1305	B-3H
F	
F551	B-2A
F552	B-2A
IC	
IC101	B-4F
IC201	B-2E
IC202	A-3E
IC203	B-4D
IC204	B-3C
IC207	B-2C
IC301	A-4D
IC401	B-4C
IC402	A-5D
IC551	B-2B
IC601	B-5B
IC602	A-4C
IC603	A-1C
IC901	A-4G
IC902	B-3A
IC903	B-3B
IC904	B-3B
IC905	B-4A
IC1101	B-1G
IC1102	B-1H
IC1103	B-2G
IC1104	B-2H
IC1105	A-2A
IC1106	B-2F
IC1107	B-3H
IC1108	B-3H
IC1109	B-3G
IC1110	A-1C
IC1301	A-3A
IC1302	A-3B
IC1303	A-3B
IC1304	B-4G
IC1305	B-4G
IC1306	B-4H
IC1307	B-3G
IC1308	B-3H
JK	
JK200	B-5A
L	
L101	A-3C
L104	A-4C
L105	A-4C
L106	A-1D
L108	A-1D
L109	A-1D
L110	A-1D
L111	A-1E
L113	A-1E
L114	A-1E
L115	A-1E
L116	A-1E
L118	A-1E
L119	A-1E
L124	B-2C
L125	A-1F
L201	A-2D
L203	A-2C
L204	A-2D
L205	B-1E
L206	A-2D
L208	A-2E
L209	A-4E
L210	B-3E
L211	A-4E
L215	B-3C
L218	A-2F
L301	B-4E
L401	B-4D
L402	B-5D
L551	A-1G
L552	A-2H
L553	A-2G
L554	A-2F
L555	B-2C
L556	A-2H
L557	A-1G
L560	A-1G
L563	A-2F
L564	A-1G
L565	A-1G
L566	B-1C
L567	B-1B
L568	B-2A
L602	A-5G
L901	A-3H
L902	B-3B
L903	B-2C
L904	A-1F
L907	B-3B
L909	A-3G
L910	A-3H
L1102	B-2F
L1103	B-2F
L1105	B-2F
L1106	B-1H
L1107	B-1F
L1108	B-1F
L1109	B-2G
L1301	B-3F
L1302	B-2F
L1303	B-3F
PG	
PG101	A-3C
PG400	B-5E
PG402	B-5D
PG551	A-2H
PG601	B-5C
PG602	A-1H
PG603	B-4F
PG604	A-1C
PG901	A-4H
PG902	B-5F
PG903	B-1C
PG904	A-3H
PG905	B-3C
PG906	B-1D
PG1101	A-1B
PG1301	A-4A
Q	
Q101	A-3C
Q102	B-3F
Q103	A-3C
Q106	A-3C
Q107	B-3F
Q108	B-3E
Q109	A-4C
Q110	A-4C
Q111	B-1E
Q114	B-1E
Q116	A-1D
Q117	B-1E
Q123	B-1D
Q124	B-1D
Q125	B-1D
Q126	B-1D
Q129	A-1E
Q133	B-2D
Q134	B-1D
Q135	B-2C
Q136	B-3E
Q141	A-4C
Q142	B-4F
Q202	A-2D
Q203	B-2E
Q208	B-1F
Q212	A-4D

IDENTIFICATION OF PARTS LOCATION

MAIN

Symbol No.	Parts Location
Q213	A-4E
Q214	A-4E
Q215	B-3D
Q216	A-3D
Q217	B-3D
Q218	B-3D
Q219	B-3D
Q220	A-3E
Q240	B-2D
Q241	B-2C
Q248	B-2F
Q249	B-2F
Q250	B-3D
Q254	A-4F
Q256	A-2E
Q260	A-3F
Q261	A-3F
Q263	A-3E
Q264	B-3E
Q265	B-3E
Q266	B-3E
Q267	A-2E
Q268	A-3F
Q301	B-4E
Q302	B-4E
Q303	B-4E
Q304	B-3E
Q307	B-4E
Q308	B-4E
Q309	B-3E
Q311	B-3E
Q401	A-5F
Q405	A-4E
Q407	A-5E
Q551	B-2A
Q552	B-1A
Q553	B-1B
Q554	B-2C
Q555	B-1C
Q602	A-5G
Q603	B-5B
Q605	B-4B
Q608	B-4F
Q901	B-3B
Q902	B-2A
Q903	B-3A
Q904	B-3A
Q905	B-3A
Q906	B-4B
Q907	B-4B
Q908	B-2A
Q912	B-4B
Q915	A-3H
Q916	A-3H
Q917	B-4A
Q919	B-3A
Q1100	B-1H
Q1101	B-3G
Q1102	B-3G
Q1103	B-3F
Q1104	B-3F
Q1105	A-2C
Q1106	B-3G
Q1107	B-3G
Q1109	A-1B
Q1110	B-1F
Q1112	A-1A
Q1113	A-1A
Q1301	B-4G
R	
R101	B-4F
R102	B-4F
R103	B-3F
R104	B-3F
R105	A-3D
R106	B-3F
R107	B-3F
R108	B-3F
R109	B-3F
R110	B-3F
R111	B-3F
R112	B-2F
R115	B-2F
R116	B-2F
R118	B-3F
R119	A-3C
R120	A-3C
R121	A-4C
R122	A-4C
R123	A-4C
R124	A-4C
R125	A-4C
R126	A-3C
R127	B-1E
R128	B-1E
R130	B-1E
R131	B-1E
R132	B-1E
R133	B-1E
R138	A-1D
R140	A-1D
R141	B-1E
R142	B-1E
R143	B-1E
R144	B-1E
R146	A-1D
R148	B-1E
R149	B-1E
R150	B-1F
R151	B-1F
R152	B-1D
R157	B-1E
R158	B-1E
R160	B-1E
R161	B-1D
R162	B-1D
R163	B-1D
R164	B-1D
R165	B-1D
R166	B-1D
R169	A-1E
R170	B-1D
R172	B-1D
R173	B-1D
R174	B-1D
R175	B-1D
R182	A-1E
R186	A-1E
R191	B-2C
R192	B-2C
R194	B-2D
R195	B-3F
R197	B-1D
R198	B-1E
R199	A-1D
R200	A-5H
R203	B-2E
R205	B-3E
R206	A-3F
R207	A-3F
R208	A-2E
R213	A-2D
R215	B-2E
R216	B-2E
R217	B-2E
R218	A-2D
R219	B-2E
R223	B-2F
R224	B-2E
R227	B-2F
R228	B-2F
R230	B-3E
R231	B-3E
R239	B-2D
R240	B-2D
R241	B-2D
R244	B-2D
R246	B-2D
R250	A-3E
R251	B-3E
R252	B-3E
R255	A-4E
R256	A-4E
R257	A-4E
R258	B-3D
R259	B-3D
R260	B-3D
R261	B-3D
R262	B-3D
R263	B-3D
R264	A-3D
R265	A-3E
R269	B-4D
R270	B-4D
R273	B-3D
R274	B-3D
R275	B-3D
R276	B-3D
R277	B-3D
R278	B-4C
R279	B-3D
R280	B-3D
R282	A-3E
R283	B-2C
R286	B-3C
R287	B-3D
R288	A-3F
R289	B-3C
R291	A-3F
R295	A-3D
R296	A-2D
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R306	A-4D
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R309	B-4E
R310	A-4D
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R313	B-4E
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R316	B-4E
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R334	B-3E
R335	B-4E
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R365	A-3E
R366	A-3E
R367	A-4F
R368	A-4F
R369	A-4F
R372	B-2D
R373	A-3E
R374	B-3D
R375	A-3E
R376	A-3F
R381	A-3E
R382	A-3E
R383	A-3F
R384	B-2E
R387	A-2E
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R396	A-3F
R398	B-3D
R401	B-4C
R403	B-5C
R404	B-5C
R405	B-5C
R406	A-5F
R407	A-5F
R408	B-5C
R417	B-4C
R421	B-4C
R422	A-4F
R423	A-4F
R424	B-4C
R425	B-4C
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R449	A-5D
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R478	A-5E
R479	A-5E
R480	A-5E
R481	A-4E
R489	B-4C
R493	A-4D
R498	A-5F
R551	B-1B
R552	B-1B
R554	B-1A
R556	B-1B
R558	B-2A
R560	B-2B
R562	B-2B
R563	B-2B
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R567	B-2B
R568	B-2B
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R587	B-1B
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R591	B-2C
R592	B-1C
R593	B-2B
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R595	B-1A
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R606	B-4B
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R610	B-5B
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R621	A-5G
R622	A-5G
R623	A-5H
R624	B-5A
R625	B-5A
R626	B-5A
R634	A-5C
R635	B-4E
R637	B-4F
R639	A-4C
R641	A-4C
R643	A-4C
R644	B-4F
R645	B-4F
R646	B-4F
R647	A-4C
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R649	A-4C
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R652	A-5C
R653	A-5C
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R658	B-4F
R659	B-5B
R663	B-4F
R668	A-2H
R680	B-1F
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R703	B-4A
R704	B-4A
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R706	B-4A
R707	B-3A
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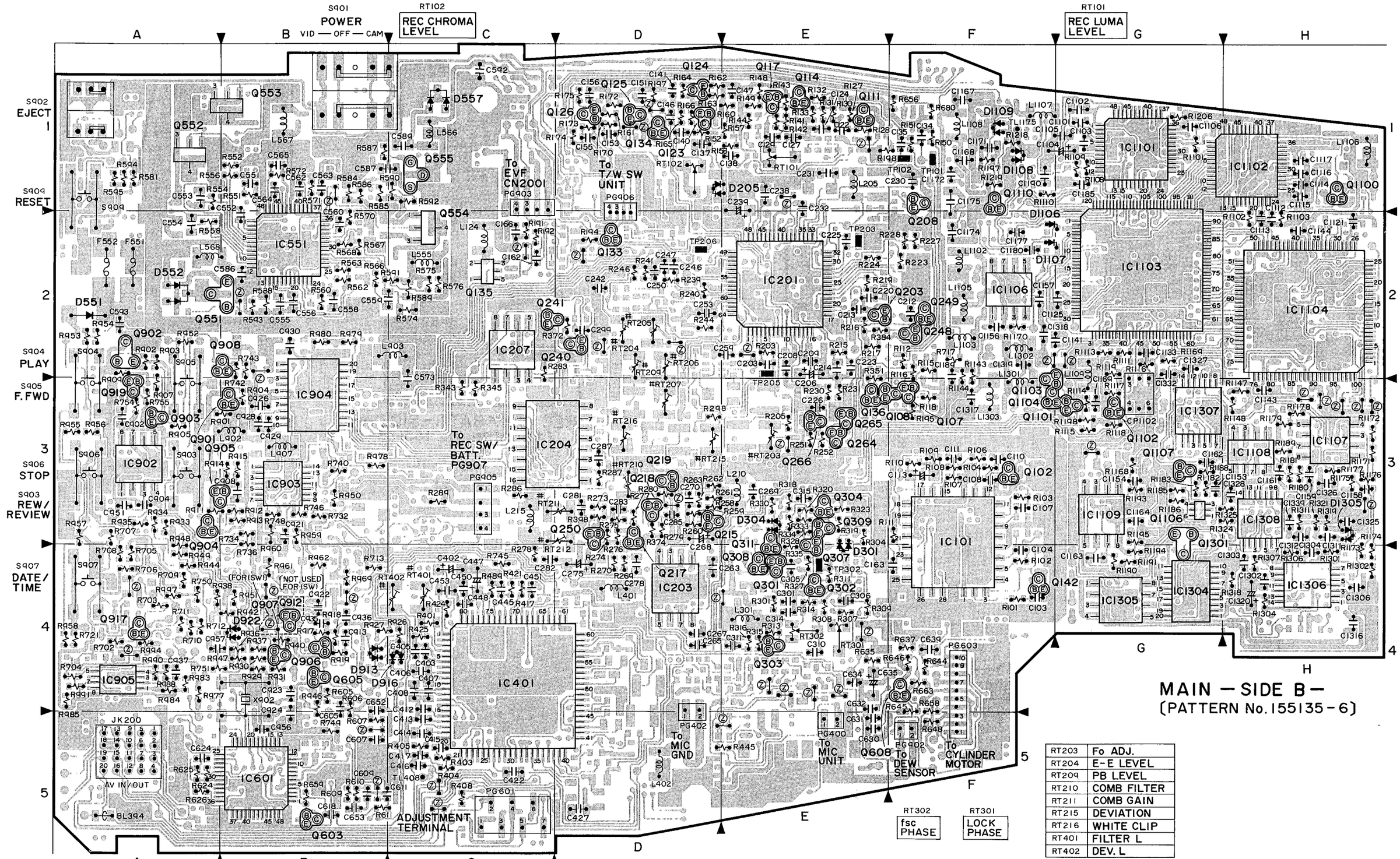
R713	B-4B
R714	A-4G
R715	A-4G
R717	B-2F
R718	A-5G
R719	A-5G
R721	B-4A
R732	B-3B
R734	B-3B
R736	B-3B
R738	A-4G
R739	A-4G
R740	B-3B
R742	B-2B
R743	B-2B
R745	B-4C
R746	B-3B
R747	A-3G
R748	B-3B
R749	B-5B
R750	B-4A
R751	B-4A
R754	B-3A
R755	B-3A
R901	B-3B
R902	B-2A
R903	B-2A
R904	B-3B
R905	B-3A
R907	B-3A
R908	A-3H
R909	B-2A
R910	A-3H
R911	B-3A
R912	B-3B
R913	B-3B
R914	B-3B
R915	B-3B
R916	A-3H
R917	B-4B
R918	B-4B
R919	B-4B
R920	A-4H
R921	A-4H
R926	B-4C
R927	B-4B
R928	A-4G
R929	B-4B
R930	B-4B
R931	B-4B
R933	B-3A
R934	B-3A
R935	B-3A
R936	B-4B
R937	B-4B
R938	B-4A
R939	A-4H
R940	B-4B
R941	A-3H
R942	B-4B
R944	B-4A
R946	B-5B
R947	B-4B
R948	B-4A
R949	B-4A
R950	B-3B
R951	B-4B
R952	B-2A
R953	B-2A
R954	B-2A
R955	B-3A
R956	B-3A
R957	B-3A
R958	B-4A
R959	B-3B
R960	B-3B
R961	B-4B
R962	B-4B
R963	A-3G
R964	A-4G
R965	A-4G
R967	A-5G
R968	A-4G
R969	B-4B
R973	A-3H
R974	A-3H
R975	A-3H
R976	A-3H
R977	B-4A
R978	B-3B
R979	B-2B
R980	B-2B
R983	B-4A
R984	B-4A
R985	B-4A
R986	A-4H
R987	A-4H
R988	B-4A
R989	A-4H
R990	B-4A
R991	B-4A
R994	B-4A
R997	B-4A
R1100	A-1B
R1101	B-1G
R1102	B-2H
R1103	B-2H
R1106	A-3A
R1107	A-1A
R1108	B-1G
R1109	B-1G
R1110	B-1F
R1111	B-2G
R1113	B-2G
R1114	B-3G
R1115	B-3G
R1116	B-2G
R1117	B-3G
R1118	B-3G
R1119	B-2G
R1123	A-2B
R1126	A-2B
R1129	A-3B
R1130	A-3B
R1131	A-3B
R1133	A-2B
R1143	B-2F
R1144	B-3F
R1147	B-3H
R1148	B-3H
R1150	A-1A
R1151	A-2B
R1153	A-2A
R1154	A-1A
R1155	A-1A
R1156	A-1A
R1157	A-2A
R1160	A-2A
R1162	A-3A
R1168	B-3G
R1169	B-2G
R1170	B-2F
R1171	B-3H
R1172	B-3H
R1173	B-4H
R1174	B-4H
R1175	B-3H
R1176	B-3H
R1177	B-3H
R1178	B-3H
R1179	B-3H
R1180	B-3H
R1181	B-3H
R1182	B-3G
R1183	B-3G
R1185	B-3G
R1186	B-3G
R1188	B-3G
R1189	B-3H
R1190	B-4G
R1191	B-4G
R1193	B-3G
R1194	B-4G
R1195	B-3G
R1197	B-1F
R1198	B-3G
R1206	B-1G
R1207	A-2B
R1208	A-1C
R1211	A-2A
R1217	A-2B
R1218	B-1F
R1219	B-1F
R1220	A-1A
R1221	A-1A
R1301	B-4H
R1302	B-4H
R1304	B-4H
R1306	B-4H
R1307	B-4H
R1311	B-3H
R1316	A-3B
R1317	A-3B
R1318	B-4H
R1319	B-3H
R1321	B-3H
R1322	A-3B
R1323	A-3B
R1324	B-3H
R1325	B-3H
R1326	A-3B
RT	
RT101	B-1E
RT102	B-1D
RT203	B-3E
RT204	B-2D
RT205	B-2D
RT206	B-2D
RT207	B-3D
RT209	B-2D
RT210	B-3D
RT211	B-3D
RT212	B-3D
RT215	B-3D
RT216	B-3D
RT301	B-4E
RT302	B-4E
RT401	B-4C
RT402	B-4C
S	
S901	B-1B
S902	B-1A
S903	B-3A
S904	B-2A
S905	B-2A
S906	B-3A
S907	B-4A
S909	B-1A
T	
T551	A-1F
TL	
TL408	B-5C
TL1175	B-1F
TP	
TP101	B-1F
TP102	B-1F
TP203	B-2E
TP205	B-3E
TP206	B-2D
TP302	B-4E
X	
X201	A-2C
X601	A-5G
X901	A-3G
X902	B-4B
X1101	A-1B
X1102	A-2B

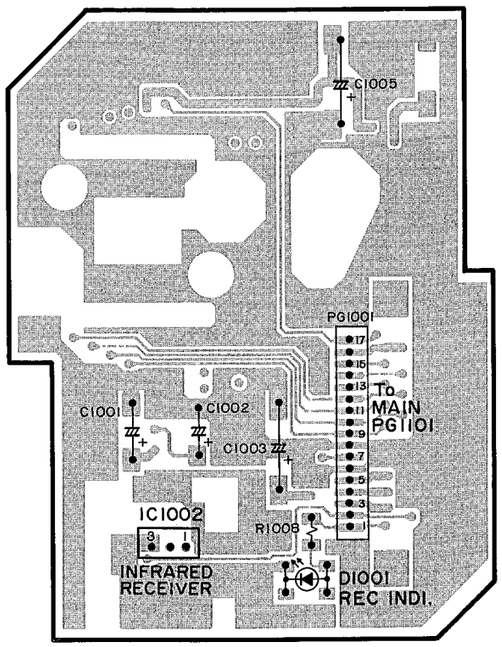
MAIN CIRCUIT BOARD [SIDE-B]
[PATTERN No. 155135-6]



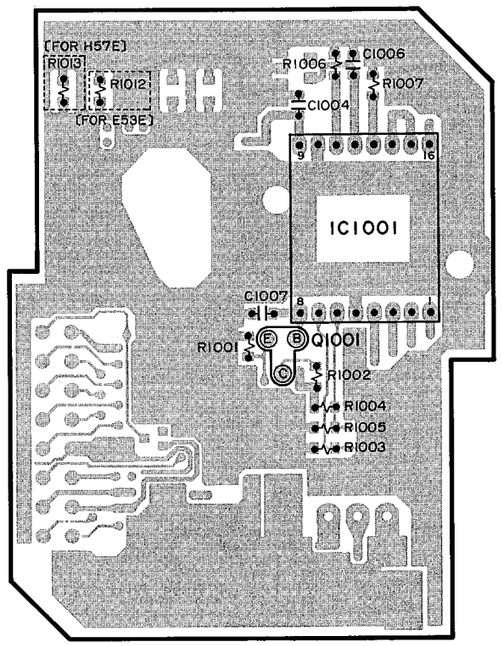
RT203	Fo ADJ.
RT204	E-E LEVEL
RT209	PB LEVEL
RT210	COMB FILTER
RT211	COMB GAIN
RT215	DEVIATION
RT216	WHITE CLIP
RT401	FILTER L
RT402	DEV. L

MAIN — SIDE B —
(PATTERN No. 155135-6)

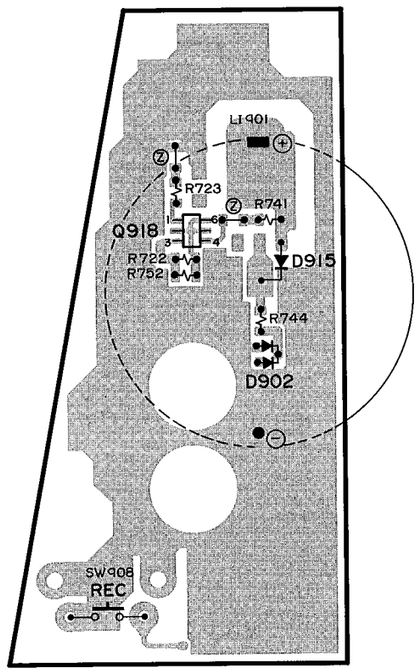
NOTE MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER
SOLDER SEMI-VARIABLE RESISTORS TO THE COMPONENTS MARKED "#" WHEN ADJUSTING THEM



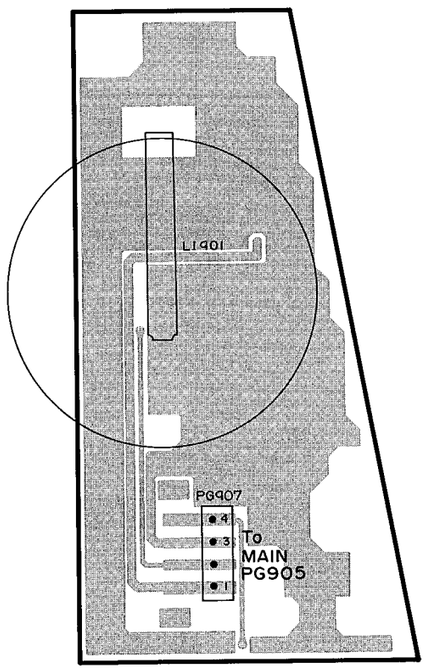
SENSOR —SIDE A—
(PATTERN No.155135-5,6)



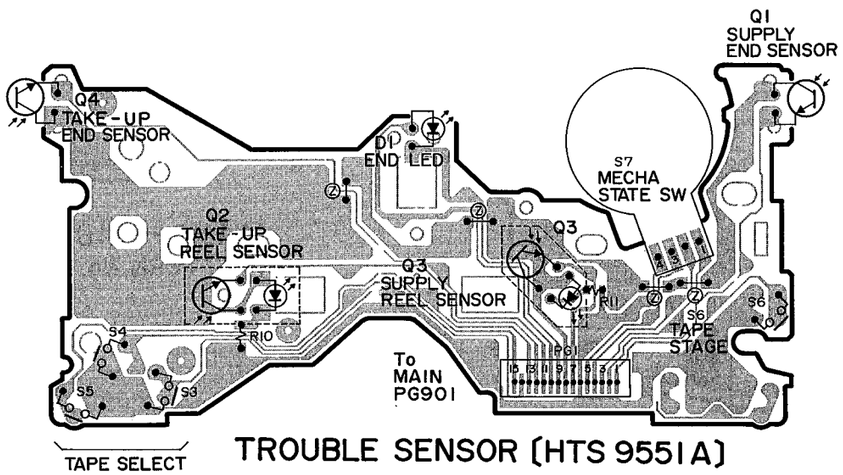
SENSOR —SIDE B—



REC SW/BATT.-SIDE A-
(PATTERN No. 155135-5,6)

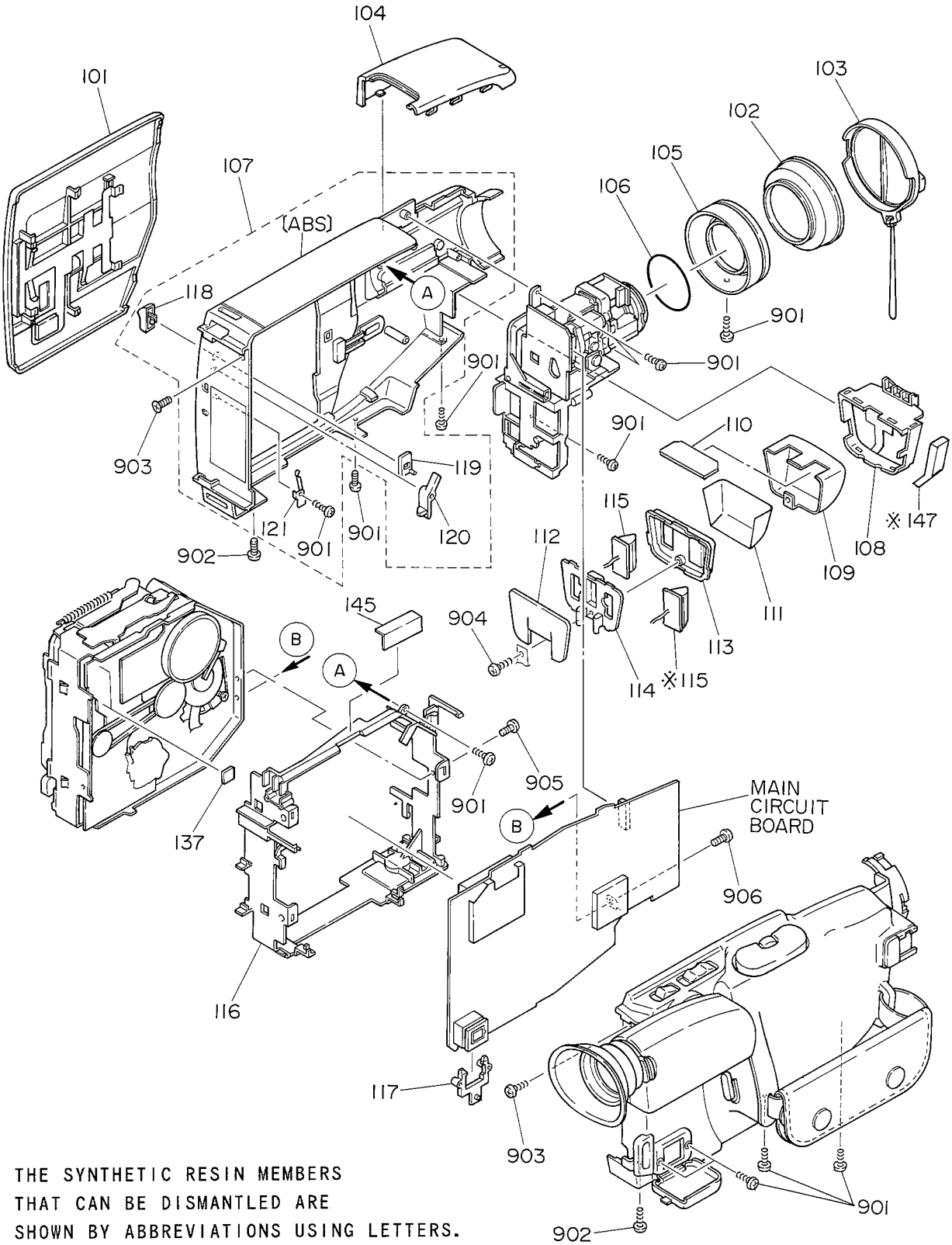


REC SW/BATT.-SIDE B-



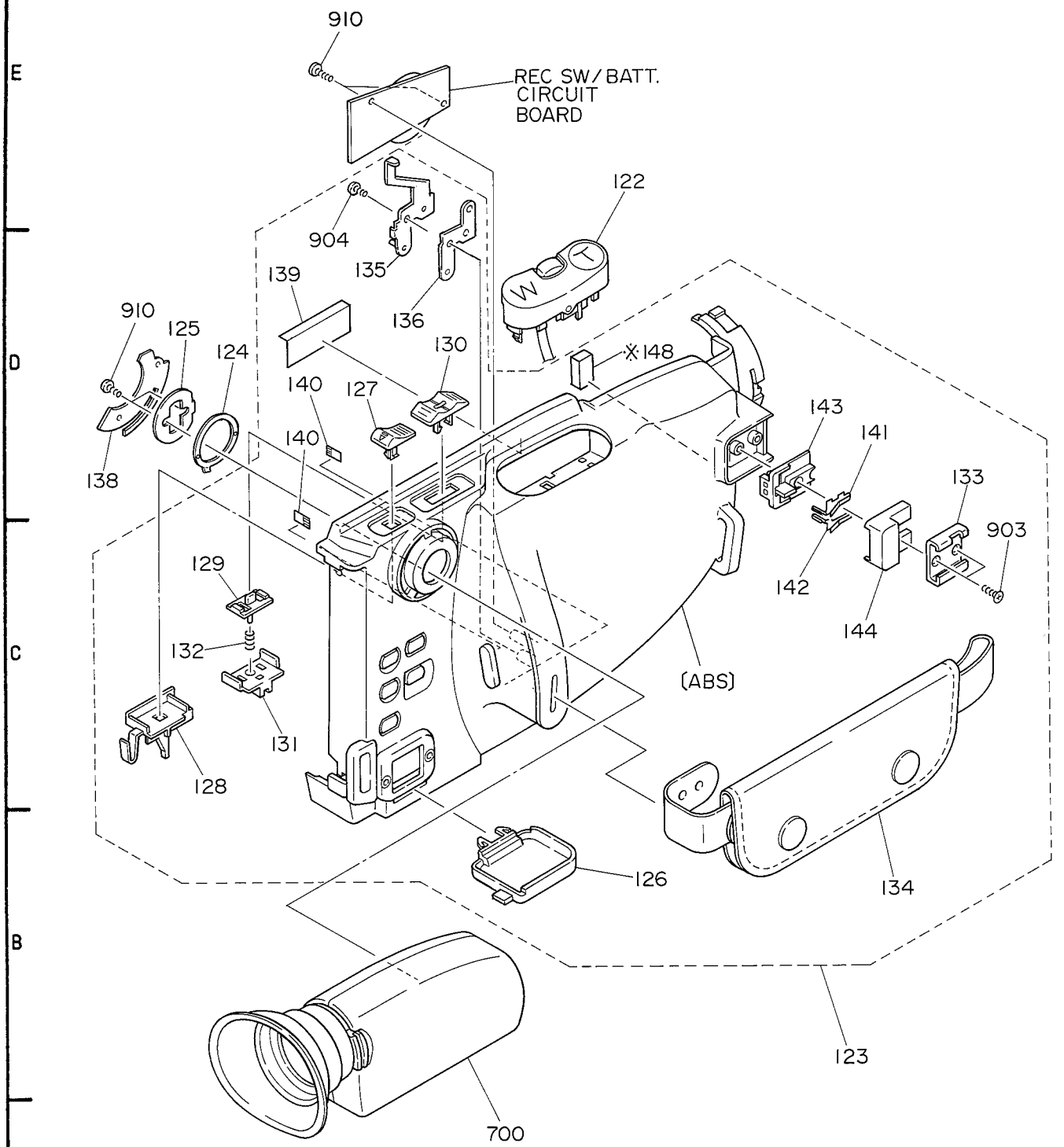
TROUBLE SENSOR (HTS 9551A)

EXPLODED VIEWS
CABINET SECTION 1 (LEFT CASE SIDE AND VCR BLOCK)



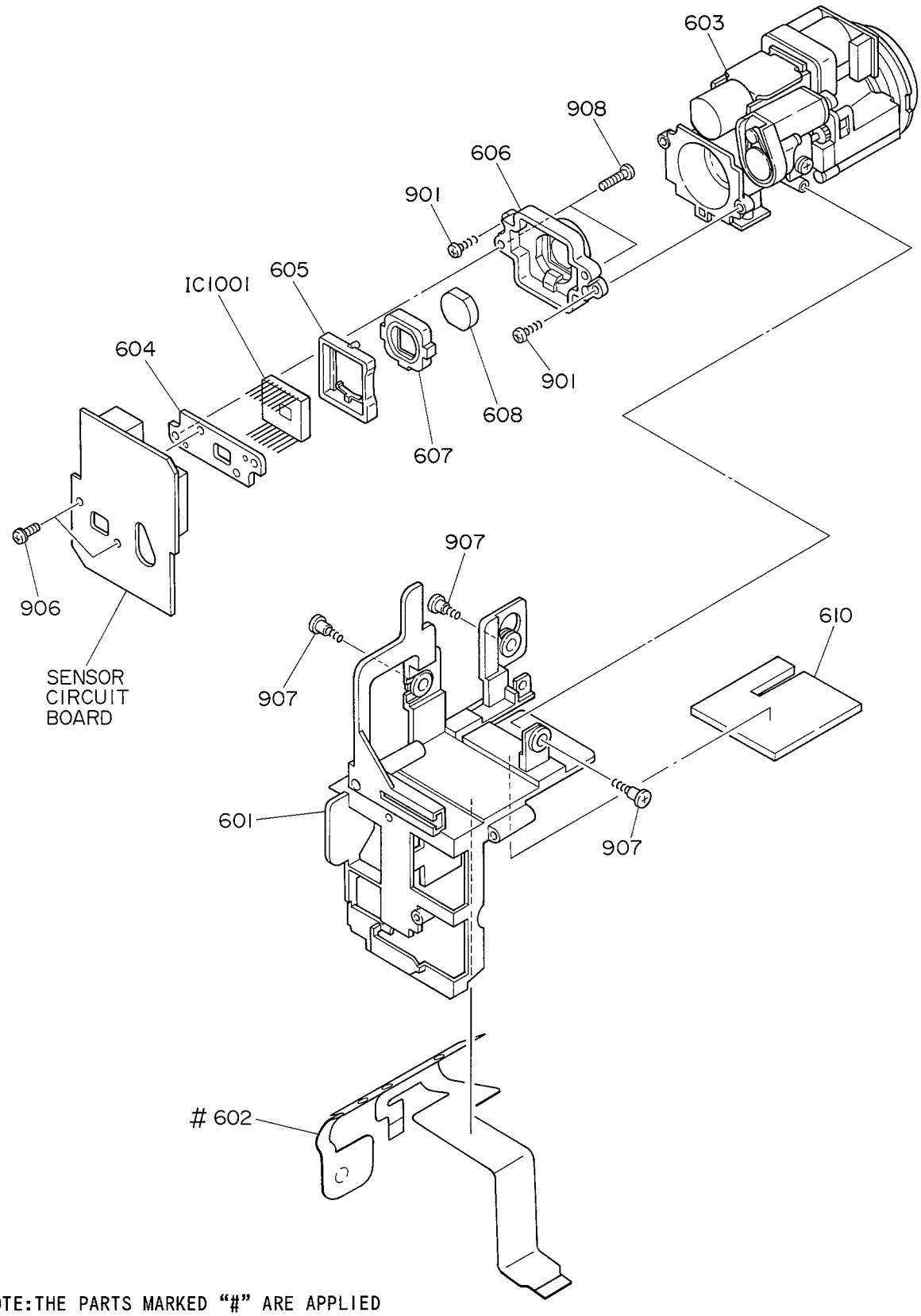
NOTE: THE SYNTHETIC RESIN MEMBERS THAT CAN BE DISMANTLED ARE SHOWN BY ABBREVIATIONS USING LETTERS. THE PARTS MARKED "※" ARE APPLIED TO THE PRODUCTS WHICH HAVE THE STEREO AUDIO FUNCTION.

CABINET SECTION 2 (RIGHT CASE SIDE)



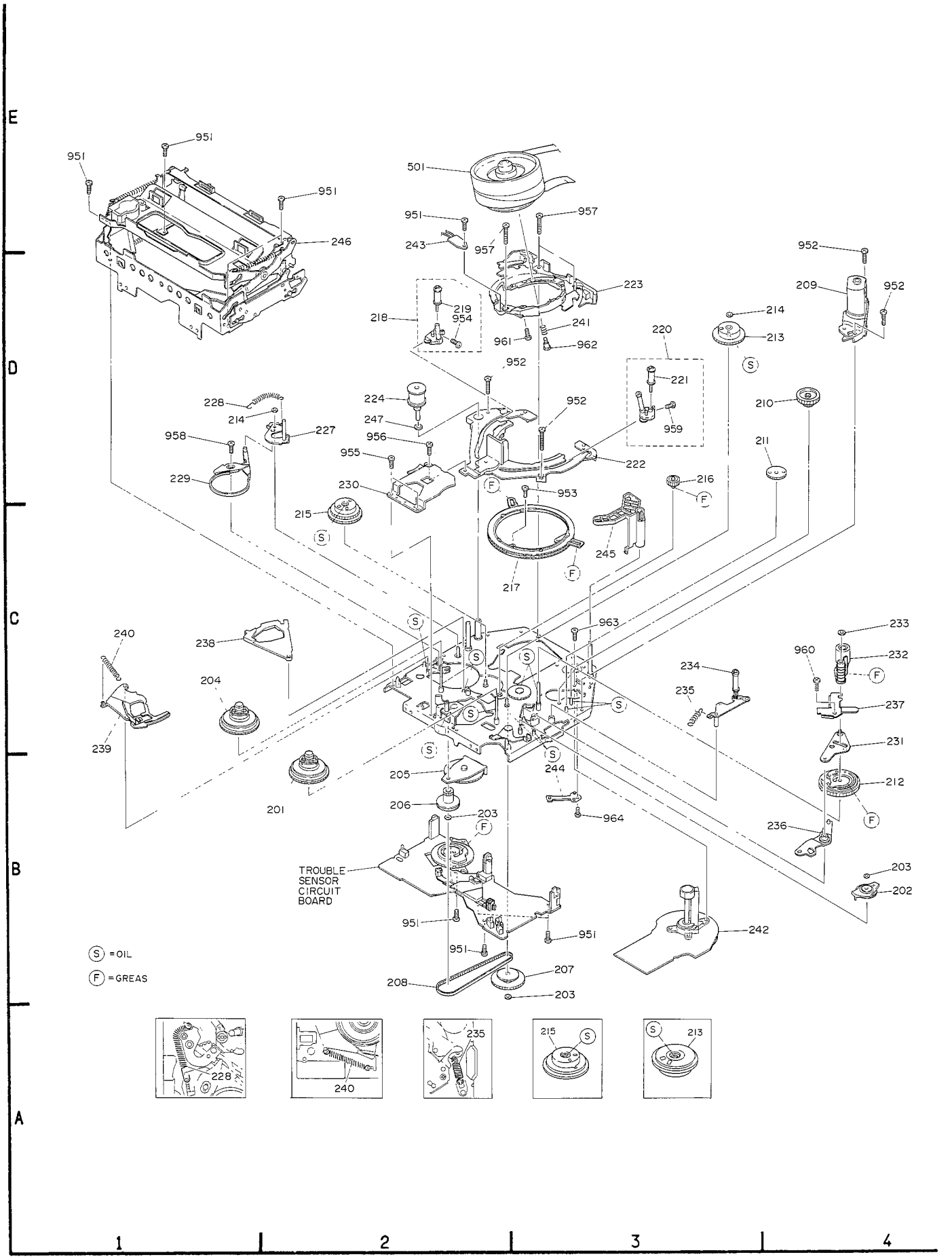
NOTE: THE SYNTHETIC RESIN MEMBERS THAT CAN BE DISMANTLED ARE SHOWN BY ABBREVIATIONS USING LETTERS. THE PARTS MARKED "※" ARE APPLIED TO THE PRODUCTS WHICH HAVE THE STEREO AUDIO FUNCTION.

CAMERA BLOCK SECTION

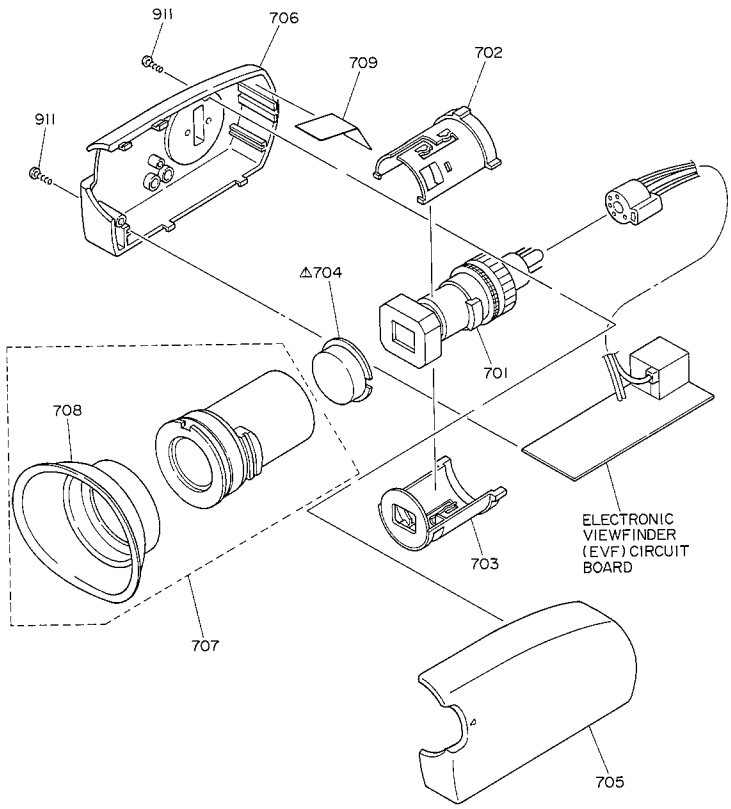


NOTE:THE PARTS MARKED "#" ARE APPLIED TO THE PRODUCTS WHICH HAVE THE FADE AND MANUAL FOCUS FUNCTIONS.

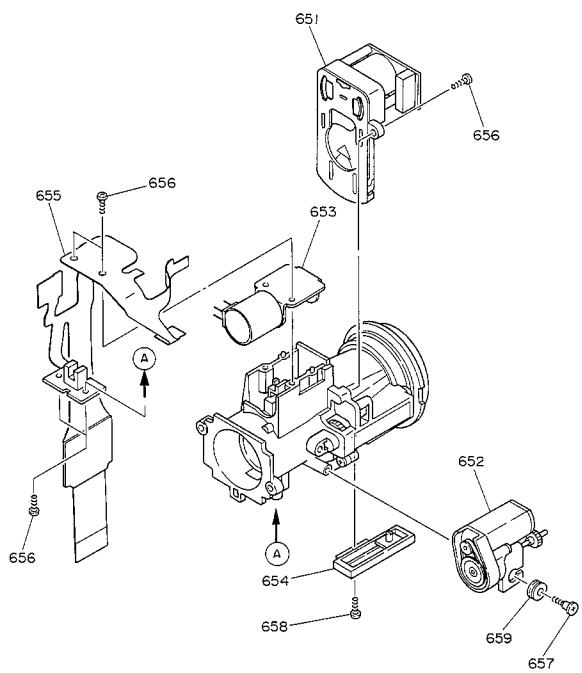
CHASSIS SECTION



ELECTRONIC VIEWFINDER (EVF) SECTION



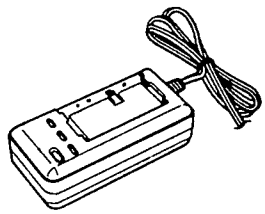
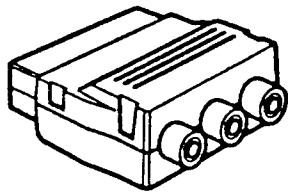
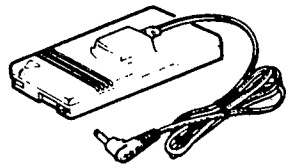
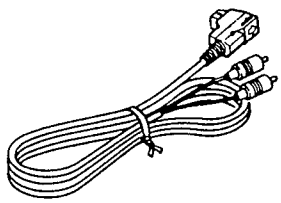
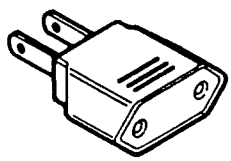
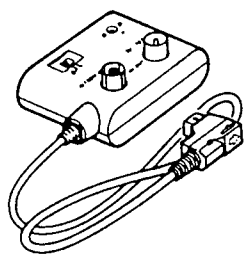
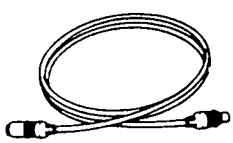
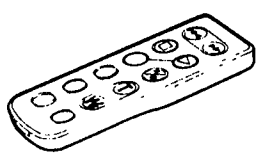
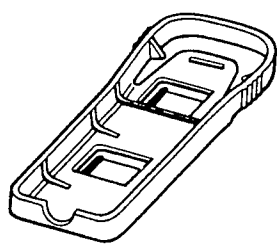
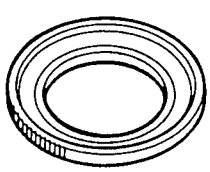
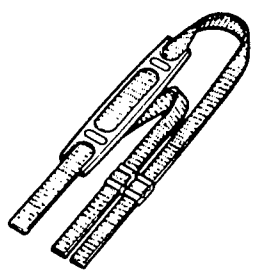
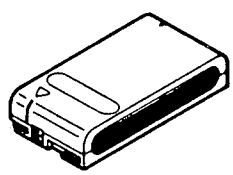
LENS BLOCK SECTION



E D C B A

1 2 3 4

ACCESSORIES

⚠802 	⚠803 	804 
805 	807 	810 
811 	812 	813 
814 	815 	⚠Battery Pack 

REPLACEMENT PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION
		MECHANISM SECTION
101	4717463	LID, CASSETTE
102	4717601	RING, LENS(FOR UK)
102	4799191	HOOD, LENS
103	4798761	CAP, FOOD
104	4725532	WINDOW, IR
105	4716973	RING, LENS(EXCEPT FOR UK)
106	4799211	RING, LENS
106	4799291	RING, LENS(FOR UK)
107	4717441	CASE, SIDE(L)
108	4716962	CASE, MICROPHONE
109	6680221	METAL
110	6568341	CUSHION
111	4345051	CUSHION
112	6568311	CUSHION
113	6408542	HOLDER, MICROPHONE
114	6408551	HOLDER, MICROPHONE
115	5422701	MICROPHONE
116	6186491	FRAME, MECHANISM
117	6408603	HOLDER
118	4750433	KNOB, EJECT
119	6408591	HOLDER
120	6443182	LEVER, EJECT
121	6529111	SPRING
122	5604851	SWITCH, T/W
123	4717421	CASE, SIDE(R)
124	4899872	SPRING
125	4826122	BRACKET
125	4826123	STOPPER(FOR UK)
126	4725552	COVER, CONNECTOR
127	4752071	KNOB, EJECT
128	6408571	HOLDER
129	4750451	KNOB, POWER
130	4752261	HOLDER, POWER KNOB
131	6408581	HOLDER
132	6305733	SPRING
133	7797471	SHOE
134	6336821	STRAP, HAND
135	4826111	PLATE, STRAP
136	4344712	SHEET
137	4592461	SPACER
138	4345032	SHEET, EVF
139	4391831	SHEET
140	4592441	SPACER
141	4590292	TERMINAL L
142	4590302	TERMINAL R
143	4590282	HOLDER
144	4714821	COVER, TERMINAL
145	4345291	CUSHION
201	6404061	REEL DISK, TAKE-UP
202	6406112	GEAR
203	7787733	WASHER
204	6404071	REEL DISK, SUPPLY
205	6401643	GEAR, IDLER
206	6406211	GEAR
207	6406032	GEAR
208	6358471	BELT
209	4589113	LOADING MOTOR BLOCK
210	6376311	GEAR
211	6406081	GEAR
212	6406242	GEAR
213	6405832	GEAR
214	7787731	WASHER
215	6405823	GEAR
216	6406131	GEAR
217	45884623	RING, LOADING
218	4589352	BASE, GUIDE ROLLER(I)
219	6424237	GUIDE ROLLER
220	4589362	BASE, GUIDE ROLLER(O)
221	4588903	GUIDE ROLLER
222	4587795	PLATE, GUIDE
223	4589005	BASE, CYLINDER
224	6406151	IMPEDANCE ROLLER
227	45890113	ARM, TENSION
228	6554231	SPRING
229	45885523	BAND, TENSION
230	6408831	COVER, IDLER
231	4826651	PLATE, CAM
232	4588292	ARM, PRESSURE ROLLER
233	7787571	WASHER
234	4588701	ARM, PULL OUT
235	6554201	SPRING
236	4588233	LEVER
237	45885313	PLATE
238	4588427	PLATE
239	4588352	BRAKE
240	6554221	SPRING
241	6554213	SPRING
242	5579651	MOTOR, CAPSTAN
243	0116201	DEW SENSOR
244	5794021	BRUSH
245	4588992	COVER, TAPE
246	4589092	CASSETTE HOLDER AS
247	7789314	WASHER
501	5435742	CYLINDER
601	6186591	FRAME, LENS
603	6951552	LENS, ZOOM
604	4899861	PLATE, SENSOR
605	6338582	HOLDER, SENSOR
606	6338572	LID, SENSOR
607	6338561	RUBBER
608	5783251	FILTER
610	6568321	CUSHION
651	6951581	IRIS BLOCK
652	6951582	MOTOR, ZOOM
653	6951593	MOTOR, AUTO FOCUS
654	6951584	SENSOR
655	6951591	CONNECTOR FLEXIBLE
656	6951586	SCREW
657	6951592	SCREW
658	6951588	SCREW
659	6951589	RUBBER
700	7055281	EVF ASSY
⚠701	5319061	CRT
702	4715251	CASE, CRT(U)
703	4715241	CASE, CRT(B)
704	4592241	COVER
705	4717303	CASE, EVF(R)
706	4715233	CASE, EVF (L)
707	4715333	LENS, EVF
708	4798482	CAP, EYE
709	4344291	SPACER
901	7775946	SCREW (2X6)
902	7775963	SCREW(2X3)
903	8639106	SCREW
904	86911063	SCREW (2X6)
905	7773891	SCREW
906	8650103	SCREW(2X3)

SYMBOL-NO	P-NO	DESCRIPTION
907	7773591	SCREW(2X4)
908	7775977	SCREW(2X7)
910	7775945	SCREW(2X5)
911	8619003	SCREW 1.7X5
951	8712024	PAN HEAD SCREW-1.4MMDX3MM
952	8700272	SCREW(1.7X5)
953	7775921	SCREW(1.4X2)
954	8714004	SCREW(1.4X2.5)
955	8712024	PAN HEAD SCREW-1.4MMDX3MM
956	86190653	SCREW(1.7X6)
957	8700976	SCREW(1.7X8.0)
958	7770791	SCREW
959	8712904	SCREW(1.4X2.0)
960	8619063	SCREW(1.7X3)
961	87111053	SCREW(2X5)
962	7785885	SCREW
963	8700264	1.7X2 SCREW
964	87411033	SCREW(2X3)
		ACCESSARIES
⚠802	4136744	ADAPTOR, AC
⚠802	4136745	ADAPTOR, AC(FOR UK)
⚠802	4136746	ADAPTOR, AC(FOR AU)
⚠803	5699421	SOCKT(FOR SW)
804	5861831	CORD
805	5860783	CORD, AV OUTPUT
807	4137261	PLUG(FOR E & UK)
809	4131721	CONVERTER RF(FOR AU)
810	5861281	MINI CONNECTOR(FOR AU)
812	5616352	REMOTE HAND SET
813	4592071	HOLDER, REMOCON
814	6508151	STEP UP RING(FOR SW & AU)
815	4131016	STRAP, SHOULDER
		VTR SECTION
C0101	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0102	0206593	ELECTROLYTIC 47UF 10V
C0103	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0104	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0107	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0108	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0110	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0111	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0112	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0113	0806001	ELECTROLYTIC 0.1UF 35V
C0118	0893121	CERAMIC CHIP 39PF+-5% 50V
C0119	0893119	CERAMIC CHIP 33PF+-5% 50V
C0120	0893122	CERAMIC CHIP 47PF+-5% 50V
C0121	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0122	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0123	0893114	CERAMIC CHIP 12PF+-5% 50V
C0124	0893123	CERAMIC CHIP 56PF+-5% 50V
C0127	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0128	0893132	CERAMIC CHIP 270PF+-5% 50V
C0129	0893122	CERAMIC CHIP 47PF+-5% 50V
C0130	0893124	CHIP CERAMIC 68PF+-5% 50V
C0131	0893121	CERAMIC CHIP 39PF+-5% 50V
C0134	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0135	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0137	0893004	CERAMIC CHIP 0.047UF+-10% 16V
C0138	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0140	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0141	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0142	0893102	CERAMIC CHIP 1.0PF+-0.25% 50V
C0143	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0144	0893119	CERAMIC CHIP 33PF+-5% 50V
C0146	0893215	CERAMIC CHIP 3300PF+-10% 50V
C0147	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0148	0806168	ELECTROLYTIC 47UF 6.3V
C0149	0893214	CERAMIC CHIP 2700PF+-10% 50V
C0150	0202158	CERAMIC CHIP 75PF+-5% 50V
C0151	0893121	CERAMIC CHIP 39PF+-5% 50V
C0153	0893167	CERAMIC CHIP 270PF+-5% 50V
C0155	0893123	CERAMIC CHIP 56PF+-5% 50V
C0156	0893119	CERAMIC CHIP 33PF+-5% 50V
C0162	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0163	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0166	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0167	0806168	ELECTROLYTIC 47UF 6.3V
C0168	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0169	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0172	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0174	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0177	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0203	0893102	CERAMIC CHIP 1.0PF+-0.25% 50V
C0204	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0205	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0206	0806024	ELECTROLYTIC 3.3UF 6V
C0207	0806168	ELECTROLYTIC 47UF 6.3V
C0208	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0209	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0212	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C0213	0893159	CERAMIC CHIP 68PF+-5% 50V
C0214	0893059	CERAMIC CHIP 0.47UF+80-20% 16V
C0215	0806004	ELECTROLYTIC 0.33UF 35V
C0216	0893119	CERAMIC CHIP 33PF+-5% 50V
C0217	0806168	ELECTROLYTIC 47UF 6.3V
C0218	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0220	0893123	CERAMIC CHIP 56PF+-5% 50V
C0223	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0225	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0226	0893191	CERAMIC CHIP 6800PF+-10% 25V
C0227	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0229	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0230	0893115	CERAMIC CHIP 15PF+-5% 50V
C0231	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0232	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0233	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0234	0806027	ELECTROLYTIC 4.7UF 4V
C0235	0806124	ELECTROLYTIC 10UF 4V
C0236	0806027	ELECTROLYTIC 4.7UF 4V
C0237	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0238	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0239	0806027	ELECTROLYTIC 4.7UF 4V
C0240	0806027	ELECTROLYTIC 4.7UF 4V
C0242	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0243	0806153	ELECTROLYTIC 10UF 16V
C0244	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0246	0893162	CERAMIC CHIP 100PF+-5% 50V
C0247	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0248	0806168	ELECTROLYTIC 47UF 6.3V
C0249	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0250	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0251	0893117	CERAMIC CHIP 22PF+-5% 50V
C0252	0893115	CERAMIC CHIP 15PF+-5% 50V
C0253	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C0256	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0257	0893152	CERAMIC CHIP 18PF+-5% 50V

SYMBOL-NO	P-NO	DESCRIPTION
C0258	0893169	CERAMIC CHIP 390PF+-5% 50V
C0259	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0260	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0262	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0263	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0264	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0265	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0266	0806147	ELECTROLYTIC 3.3UF 35V
C0267	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0268	0806124	ELECTROLYTIC 10UF 4V
C0269	0893106	CERAMIC CHIP 4.0PF+-0.25% 50V
C0270	0893127	CERAMIC CHIP 120PF+-5% 50V
C0271	0893152	CERAMIC CHIP 18PF+-5% 50V
C0272	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0273	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0275	0806024	ELECTROLYTIC 3.3UF 6V
C0276	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0277	0806147	ELECTROLYTIC 3.3UF 35V
C0278	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0279	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0280	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0281	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0282	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0283	0893161	CERAMIC CHIP 82PF+-5% 50V
C0285	0893162	CERAMIC CHIP 100PF+-5% 50V
C0287	0893166	CERAMIC CHIP 220PF+-5% 50V
C0288	0806153	ELECTROLYTIC 10UF 16V
C0289	0806178	ELECTROLYTIC 220UF 4V
C0292	0806018	ELECTROLYTIC 2.2UF 6V
C0293	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0296	0893127	CERAMIC CHIP 120PF+-5% 50V
C0297	0893114	CERAMIC CHIP 12PF+-5% 50V
C0299	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0301	0893163	CERAMIC CHIP 120PF+-5% 50V
C0302	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0303	0806124	ELECTROLYTIC 10UF 4V
C0304	0893126	CERAMIC CHIP 100PF+-5% 50V
C0305	0893169	CERAMIC CHIP 390PF+-5% 50V
C0306	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0307	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0308	0806149	ELECTROLYTIC 4.7UF 25V
C0309	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0310	0893157	CERAMIC CHIP 47PF+-5% 50V
C0311	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0312	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0313	0806168	ELECTROLYTIC 47UF 6.3V
C0314	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0315	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0316	0806153	ELECTROLYTIC 10UF 16V
C0375	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0376	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0377	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0379	0806153	ELECTROLYTIC 10UF 16V
C0383	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0390	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0391	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0394	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0395	0806168	ELECTROLYTIC 47UF 6.3V
C0399	0806153	ELECTROLYTIC 10UF 16V
C0400	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0401	0893119	CERAMIC CHIP 33PF+-5% 50V
C0402	0806011	ELECTROLYTIC 1.0UF 16V
C0403	0893175	CERAMIC CHIP 1000PF+-5% 50V
C0405	0893175	CERAMIC CHIP 1000PF+-5% 50V
C0406	0893059	CERAMIC CHIP 0.47UF+80-20% 16V
C0407	0893035	CERAMIC CHIP 2200PF+-10% 50V
C0408	0893033	CERAMIC CHIP 1500PF+-10% 50V
C0409	0806162	ELECTROLYTIC 33UF 4V
C0410	0806018	ELECTROLYTIC 2.2UF 6V
C0411	0806027	ELECTROLYTIC 4.7UF 4V
C0412	0893175	CERAMIC CHIP 1000PF+-5% 50V
C0413	0893175	CERAMIC CHIP 1000PF+-5% 50V
C0414	0893059	CERAMIC CHIP 0.47UF+80-20% 16V
C0415	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0416	0893171	CERAMIC CHIP 470PF+-5% 50V
C0417	0893215	CERAMIC CHIP 3300PF+-10% 50V
C0418	0806119	ELECTROLYTIC 4.7UF 10V
C0419	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0420	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0421	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0422	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0423	0806027	ELECTROLYTIC 4.7UF 4V
C0424	0806153	ELECTROLYTIC 10UF 16V
C0427	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0429	0806153	ELECTROLYTIC 10UF 16V
C0445	0893166	CERAMIC CHIP 220PF+-5% 50V
C0447	0806005	ELECTROLYTIC 0.47UF 25V
C0448	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0449	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0450	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0451	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0452	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0453	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0455	0806011	ELECTROLYTIC 1.0UF 16V
C0460	0806168	ELECTROLYTIC 47UF 6.3V
C0466	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0467	0893186	CERAMIC CHIP 0.033UF+-10% 16V
C0469	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0470	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0471	0893189	CERAMIC CHIP 0.0056UF+-10% 25V
C0472	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0473	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0474	0893242	CERAMIC CHIP 0.022UF+80-20% 50V
C0475	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0476	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0477	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0478	0806146	ELECTROLYTIC 2.2UF 50V
C0487	0806153	ELECTROLYTIC 10UF 16V
C0491	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0492	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0495	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0496	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0499	0806168	ELECTROLYTIC 47UF 6.3V
C0551	0893155	CERAMIC CHIP 33PF+-5% 50V
C0552	0893217	CERAMIC CHIP 4700PF+-10% 50V
C0553	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C0554	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C0555	0209942	CERAMIC CHIP 100PF+-5% 50V
C0556	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0557	0806153	ELECTROLYTIC 10UF 16V
C0558	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0559	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0560	0893202	CERAMIC CHIP 330PF+-10% 50V
C0562	0893203	CERAMIC CHIP 390PF+-10% 50V
C0563	0893158	CERAMIC CHIP 56PF+-5% 50V
C0564	0893202	CERAMIC CHIP 330PF+-10% 50V
C0565	0893155	CERAMIC CHIP 33PF+-5% 50V
C0566	0806148	ELECTROLYTIC 3.3UF 50V
C0568	0206671	ELECTROLYTIC 10UF 10V
C0570	0206671	ELECTROLYTIC 10UF 10V

SYMBOL-NO	P-NO	DESCRIPTION
C0571	0206671	ELECTROLYTIC 10UF 10V
C0573	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0574	0806157	ELECTROLYTIC 22UF 6.3V
C0577	0206671	ELECTROLYTIC 10UF 10V
C0578	0206671	ELECTROLYTIC 10UF 10V
C0579	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0580	0206671	ELECTROLYTIC 10UF 10V
C0584	0206671	ELECTROLYTIC 10UF 10V
C0585	0806173	ELECTROLYTIC 100UF 4V
C0586	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0587	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0588	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0589	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0591	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0592	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0593	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C0594	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0605	0893206	CERAMIC CHIP 680PF+-10% 50V
C0607	0893199	CERAMIC CHIP 220PF+-10% 50V
C0609	0893206	CERAMIC CHIP 680PF+-10% 50V
C0611	0893202	CERAMIC CHIP 330PF+-10% 50V
C0617	0806149	ELECTROLYTIC 4.7UF 25V
C0618	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0619	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0620	0893122	CERAMIC CHIP 47PF+-5% 50V
C0621	0893122	CERAMIC CHIP 47PF+-5% 50V
C0622	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0623	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0624	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0627	0806153	ELECTROLYTIC 10UF 16V
C0630	0893186	CERAMIC CHIP 0.033UF+-10% 16V
C0631	0893186	CERAMIC CHIP 0.033UF+-10% 16V
C0632	0893186	CERAMIC CHIP 0.033UF+-10% 16V
C0633	0806153	ELECTROLYTIC 10UF 16V
C0634	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C0635	0806111	ELECTROLYTIC 0.47UF 35V
C0636	0806145	ELECTROLYTIC 1UF 50V
C0639	0893011	CERAMIC CHIP 0.15UF+-10% 16V
C0640	0806003	ELECTROLYTIC 0.22UF 35V
C0641	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0642	0893182	CERAMIC CHIP 0.015UF+-10% 16V
C0643	0893182	CERAMIC CHIP 0.015UF+-10% 16V
C0644	0893182	CERAMIC CHIP 0.015UF+-10% 16V
C0645	0893182	CERAMIC CHIP 0.015UF+-10% 16V
C0649	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0650	0893055	CERAMIC CHIP 0.1UF+80-20% 16V
C0652	0893202	CERAMIC CHIP 330PF+-10% 50V
C0653	0893204	CERAMIC CHIP 470PF+-10% 50V
C0654	0806153	ELECTROLYTIC 10UF 16V
C0901	0806169	ELECTROLYTIC 47UF 16V
C0902	0893059	CERAMIC CHIP 0.47UF+80-20% 16V
C0903	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0904	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0905	0806168	ELECTROLYTIC 47UF 6.3V
C0908	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0909	0806174	ELECTROLYTIC 100UF 6.3V
C0910	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0912	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0913	0893175	CERAMIC CHIP 1000PF+-5% 50V
C0914	0806174	ELECTROLYTIC 100UF 6.3V
C0919	0893115	CERAMIC CHIP 15PF+-5% 50V
C0920	0893115	CERAMIC CHIP 15PF+-5% 50V
C0921	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0922	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0923	0893118	CERAMIC CHIP 27PF+-5% 50V
C0924	0893118	CERAMIC CHIP 27PF+-5% 50V
C0926	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0928	0893119	CERAMIC CHIP 33PF+-5% 50V
C0929	0893126	CERAMIC CHIP 100PF+-5% 50V
C0930	0893131	CERAMIC CHIP 220PF+-5% 50V
C0933	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0934	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0935	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0936	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0937	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0942	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0944	0806168	ELECTROLYTIC 47UF 6.3V
C0947	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0949	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0951	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0952	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0953	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0956	0893162	CERAMIC CHIP 100PF+-5% 50V
C0957	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C1101	0893117	CERAMIC CHIP 22PF+-5% 50V
C1102	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C1103	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1104	0806019	ELECTROLYTIC 2.2UF 10V
C1105	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C1106	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C1107	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1108	0806167	ELECTROLYTIC 47UF 4V
C1109	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1110	0806167	ELECTROLYTIC 47UF 4V
C1111	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1112	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1113	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1114	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1115	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1116	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1117	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1118	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1119	0806174	ELECTROLYTIC 100UF 6.3V
C1120	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1121	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1122	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1123	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1124	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1125	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1126	0893121	CERAMIC CHIP 39PF+-5% 50V
C1127	0893121	CERAMIC CHIP 39PF+-5% 50V
C1128	0806153	ELECTROLYTIC 10UF 16V
C1129	0806153	ELECTROLYTIC 10UF 16V
C1130	0806153	ELECTROLYTIC 10UF 16V
C1131	0806173	ELECTROLYTIC 100UF 4V
C1133	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1134	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1135	0893175	CERAMIC CHIP 1000PF+-5% 50V
C1136	0893113	CERAMIC CHIP 10PF+-0.5% 50V
C1137	0893113	CERAMIC CHIP 10PF+-0.5% 50V
C1138	0893175	CERAMIC CHIP 1000PF+-5% 50V
C1139	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1140	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1141	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1142	0806174	ELECTROLYTIC 100UF 6.3V
C1143	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1144	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C1145	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C1146	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1148	0893193	CERAMIC CHIP 0.01UF+-10% 25V

SYMBOL-NO	P-NO	DESCRIPTION
C1151	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1153	0893133	CERAMIC CHIP 330PF+-5% 50V
C1154	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1155	0806153	ELECTROLYTIC 10UF 16V
C1156	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1157	0893118	CERAMIC CHIP 27PF+-5% 50V
C1158	0893133	CERAMIC CHIP 330PF+-5% 50V
C1159	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1161	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1162	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1163	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1164	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1166	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C1167	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1168	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1169	0893114	CERAMIC CHIP 12PF+-5% 50V
C1170	0893131	CERAMIC CHIP 220PF+-5% 50V
C1171	0893059	CERAMIC CHIP 0.47UF+80-20% 16V
C1172	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1173	0806145	ELECTROLYTIC 1UF 50V
C1174	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1175	0202169	CERAMIC CHIP 4.7UF+80-20% 16V
C1176	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1177	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1179	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C1180	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1181	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1184	0806157	ELECTROLYTIC 22UF 6.3V
C1185	0893116	CERAMIC CHIP 18PF+-5% 50V
C1186	0893128	CERAMIC CHIP 150PF+-5% 50V
C1187	0893128	CERAMIC CHIP 150PF+-5% 50V
C1189	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1190	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1192	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1193	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1302	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1303	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C1304	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1306	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1309	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1311	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1312	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1316	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C1317	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1318	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1319	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1320	0806027	ELECTROLYTIC 4.7UF 4V
C1322	0806168	ELECTROLYTIC 47UF 6.3V
C1323	0806168	ELECTROLYTIC 47UF 6.3V
C1324	0806169	ELECTROLYTIC 47UF 16V
C1325	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C1326	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1327	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C1328	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1329	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1330	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1331	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1332	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1333	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1334	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1335	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1336	0893215	CERAMIC CHIP 3300PF+-10% 50V
C1337	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1338	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1339	0893119	CERAMIC CHIP 33PF+-5% 50V

SYMBOL-NO	P-NO	DESCRIPTION
R0010	01039303	CHIP RESISTOR 390OHM+-5% 1/8W
R0011	0103838	RESISTOR CHIP 390OHM+-5% 0.1W
R0101	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R0102	0790007	CHIP RESISTOR 5.6 OHM+-5% 1/16W
R0103	0790007	CHIP RESISTOR 5.6 OHM+-5% 1/16W
R0104	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R0105	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R0106	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0107	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R0108	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0109	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R0110	0790076	CHIP RESISTOR 820KOHM+-5% 1/16W
R0111	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0112	0790028	CHIP RESISTOR 220 OHM+-5% 1/16W
R0115	0790026	CHIP RESISTOR 150 OHM+-5% 1/16W
R0116	0790026	CHIP RESISTOR 150 OHM+-5% 1/16W
R0118	0790026	CHIP RESISTOR 150 OHM+-5% 1/16W
R0119	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0120	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0121	0790008	CHIP RESISTOR 6.8 OHM+-5% 1/16W
R0122	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0123	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R0124	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R0125	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R0126	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0127	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0128	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0130	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R0131	0790031	CHIP RESISTOR 330 OHM+-5% 1/16W
R0132	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R0133	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R0138	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R0140	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R0141	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R0142	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0143	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0144	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0146	0790029	CHIP RESISITOR 270 OHM+-5% 1/16W
R0148	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0149	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R0150	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R0151	0790045	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R0152	0790041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R0157	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R0158	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0160	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0161	0790029	CHIP RESISITOR 270 OHM+-5% 1/16W
R0162	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0163	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R0164	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R0165	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0166	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0169	0790035	CHIP RESISTOR 680 OHM+-5% 1/16W
R0170	0790027	CHIP RESISTOR 180OHM+-5% 1/16W
R0172	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0173	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R0174	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0175	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0182	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0186	0790028	CHIP RESISTOR 220 OHM+-5% 1/16W
R0191	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R0192	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R0194	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0195	0790026	CHIP RESISTOR 150 OHM+-5% 1/16W
R0197	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DESCRIPTION
R0198	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0199	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0200	0104093	CHIP RESSISTOR 75 OHM+-5% 1/16W
R0203	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R0205	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0206	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0207	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0208	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R0213	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0215	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R0216	0790041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R0217	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R0218	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0219	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0223	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0224	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0227	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R0228	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R0230	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0231	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0239	0790029	CHIP RESISITOR 270 OHM+-5% 1/16W
R0240	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R0241	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R0244	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0246	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0250	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0251	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0252	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0255	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0256	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0257	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0258	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0259	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R0260	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0261	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R0262	0790032	CHIP RESISTOR 390 OHM+-5% 1/16W
R0263	0790035	CHIP RESISTOR 680 OHM+-5% 1/16W
R0264	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0265	0790035	CHIP RESISTOR 680 OHM+-5% 1/16W
R0269	0790025	CHIP RESISTOR 120 OHM+-5% 1/16W
R0270	0790063	CHIP RESISTOR 82KOHM+-5% 1/16W
R0273	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0274	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R0275	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0276	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0277	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0278	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R0279	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0280	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0282	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R0283	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0286	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0287	0790068	CHIP RESISTOR 220KOHM+-5% 1/16W
R0288	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R0289	0104093	CHIP RESISTOR 75 OHM+-5% 1/16W
R0291	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0295	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R0296	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0298	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0301	0790049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R0302	0790049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R0303	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0304	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0306	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0307	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0308	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0309	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0310	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0311	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0313	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0314	0790045	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R0315	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R0316	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R0317	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0318	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0319	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R0320	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R0323	0790041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R0324	0790045	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R0325	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R0326	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0327	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0328	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0330	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0333	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0334	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0335	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0339	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0343	0104529	CHIP RESISTOR 11KOHM+-1% 1/16W
R0345	0790049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R0351	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0356	0790072	CHIP RESISTOR 390KOHM+-5% 1/16W
R0357	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0361	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0362	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0363	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R0364	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R0365	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R0366	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0367	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R0368	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R0369	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0372	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0373	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0374	0790056	CHIP RESISTOR 27KOHM+-5% 1/16W
R0375	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0376	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0381	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R0382	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R0383	0790028	CHIP RESISTOR 220 OHM+-5% 1/16W
R0384	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0387	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0388	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R0391	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R0394	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0395	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0396	0790025	CHIP RESISTOR 120 OHM+-5% 1/16W
R0398	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0401	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R0403	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0404	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0405	0790041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R0406	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R0407	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R0408	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0417	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0421	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0422	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R0423	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0424	0790066	CHIP RESISTOR 150KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DESCRIPTION
R0425	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0432	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0433	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0436	0790028	CHIP RESISTOR 220 OHM+-5% 1/16W
R0437	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R0441	0790049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R0442	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0443	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0444	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R0445	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R0446	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0447	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0448	0790066	CHIP RESISTOR 150KOHM+-5% 1/16W
R0449	0790066	CHIP RESISTOR 150KOHM+-5% 1/16W
R0450	0790066	CHIP RESISTOR 150KOHM+-5% 1/16W
R0451	0790075	CHIP RESISTOR 680KOHM+-5% 1/16W
R0475	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R0476	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R0477	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R0478	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R0479	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0480	0790026	CHIP RESISTOR 150 OHM+-5% 1/16W
R0481	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0489	0790068	CHIP RESISTOR 220KOHM+-5% 1/16W
R0493	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0498	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0551	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0552	0790074	CHIP RESISTOR 560KOHM+-5% 1/16W
R0554	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0556	0790074	CHIP RESISTOR 560KOHM+-5% 1/16W
R0558	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0560	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0562	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R0563	0790056	CHIP RESISTOR 27KOHM+-5% 1/16W
R0566	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0567	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0568	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0570	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R0571	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R0572	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0574	0104301	CHIP RESISTOR 4.7KOHM+-0.5% 1/16W
R0575	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0576	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R0579	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0580	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0581	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0582	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0584	0104115	CHIP RESISTOR 3.9KOHM 1/10W
R0585	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R0586	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R0587	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0588	0104304	CHIP RESISTOR 22KOHM+-0.5% 1/16W
R0589	0104303	CHIP RESISTOR 12KOHM+-0.5% 1/16W
R0590	0104302	CHIP RESISTOR 5.6KOHM+-0.5% 1/16W
R0591	0790065	CHIP RESISTOR 120KOHM+-5% 1/16W
R0592	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R0593	0790075	CHIP RESISTOR 680KOHM+-5% 1/16W
R0594	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0595	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R0605	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R0606	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R0607	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R0609	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R0610	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R0611	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DESCRIPTION
R0616	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0620	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0621	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0622	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0623	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0624	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R0625	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R0626	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0634	0790035	CHIP RESISTOR 680 OHM+-5% 1/16W
R0635	0105701	CHIP RESISTOR 43KOHM+-5% 1/16W
R0637	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0639	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0641	0790072	CHIP RESISTOR 390KOHM+-5% 1/16W
R0643	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R0644	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0645	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0646	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0647	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R0648	0790019	CHIP RESISTOR 47 OHM+-5% 1/16W
R0649	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R0650	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R0651	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R0652	0104246	CHIP RESISTER 1.0 OHM+-5% 1/10W
R0653	0104246	CHIP RESISTER 1.0 OHM+-5% 1/10W
R0656	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0658	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0659	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0663	0790019	CHIP RESISTOR 47 OHM+-5% 1/16W
R0668	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0680	0790075	CHIP RESISTOR 680KOHM+-5% 1/16W
R0701	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0702	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0703	0790026	CHIP RESISTOR 150 OHM+-5% 1/16W
R0704	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0705	0104562	CHIP RESISTOR 39KOHM+-1% 1/16W
R0706	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0707	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0708	0104503	CHIP RESISTOR 27KOHM+-1% 1/16W
R0709	0104562	CHIP RESISTOR 39KOHM+-1% 1/16W
R0710	0104503	CHIP RESISTOR 27KOHM+-1% 1/16W
R0711	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0712	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0713	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0714	0790066	CHIP RESISTOR 150KOHM+-5% 1/16W
R0715	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0717	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R0718	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0719	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0721	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0722	0104542	CHIP RESISTOR 10KOHM+-1% 1/16W
R0723	0104503	CHIP RESISTOR 27KOHM+-1% 1/16W
R0732	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0734	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0736	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0738	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0739	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0740	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0741	0790027	CHIP RESISTOR 180OHM+-5% 1/16W
R0742	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0743	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0744	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0745	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0746	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0747	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0748	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DESCRIPTION
R0749	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0750	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0751	0790075	CHIP RESISTOR 680KOHM+-5% 1/16W
R0752	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0754	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0755	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0901	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0902	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0903	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0904	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0905	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0907	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0908	0104563	CHIP RESISTOR 47KOHM+-1% 1/16W
R0909	0104566	CHIP RESISTOR 120KOHM+-1% 1/16W
R0910	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0911	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0912	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0913	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0914	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0915	0790073	CHIP RESISTOR 470KOHM+-5% 1/16W
R0916	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0917	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0918	0790068	CHIP RESISTOR 220KOHM+-5% 1/16W
R0919	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0920	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0921	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0926	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0927	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R0928	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0929	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0930	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0931	0790032	CHIP RESISTOR 390 OHM+-5% 1/16W
R0933	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0934	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0935	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0936	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0937	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0938	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0939	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0940	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0941	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0942	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0944	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0946	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0947	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0948	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0949	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0950	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0951	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0952	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0953	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0954	0790032	CHIP RESISTOR 390 OHM+-5% 1/16W
R0955	0790049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R0956	0790032	CHIP RESISTOR 390 OHM+-5% 1/16W
R0957	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0958	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R0959	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0960	0104111	METAL FILM 10KOHM+-1% 1/10W
R0961	0104111	METAL FILM 10KOHM+-1% 1/10W
R0962	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0963	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0964	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0965	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0967	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0968	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DESCRIPTION
R0969	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0973	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0974	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0975	0103833	CHIP RESISTOR 150 OHM+-5% 0.1W
R0976	0103833	CHIP RESISTOR 150 OHM+-5% 0.1W
R0977	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0978	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0979	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0980	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0983	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0984	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0985	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0986	0790073	CHIP RESISTOR 470KOHM+-5% 1/16W
R0987	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0988	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0989	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0990	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0991	0790073	CHIP RESISTOR 470KOHM+-5% 1/16W
R0994	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0997	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R1100	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1101	0790068	CHIP RESISTOR 220KOHM+-5% 1/16W
R1102	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R1103	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1104	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R1106	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1107	0790028	CHIP RESISTOR 220 OHM+-5% 1/16W
R1108	0790027	CHIP RESISTOR 180OHM+-5% 1/16W
R1109	0790027	CHIP RESISTOR 180OHM+-5% 1/16W
R1110	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R1111	0104547	CHIP RESISTOR 4.22KOHM+-1% 1/16W
R1113	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R1114	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R1115	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1116	0104545	CHIP RESISTOR 1.24KOHM+-1% 1/16W
R1117	0104554	CHIP RESISTOR 1KOHM+-1% 1/16W
R1118	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1119	0104549	CHIP RESISTOR 53MOHM+-1% 1/16W
R1122	0790025	CHIP RESISTOR 120 OHM+-5% 1/16W
R1123	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R1124	0790021	CHIP RESISTOR 56 OHM+-5% 1/16W
R1125	0790021	CHIP RESISTOR 56 OHM+-5% 1/16W
R1126	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R1129	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R1130	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1131	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R1133	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1143	0104501	CHIP RESISTOR 750 OHM+-1% 1/16W
R1144	0104571	CHIP RESISTOR 3.9KOHM+-1% 1/16W
R1147	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R1148	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R1150	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R1151	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R1153	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1154	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R1155	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R1156	0104585	CHIP RESISTOR 100KOHM+-5% 1/32W
R1157	0104581	CHIP RESISTOR 1KOHM+-5% 1/32W
R1160	0790056	CHIP RESISTOR 27KOHM+-5% 1/16W
R1162	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R1168	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R1169	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1170	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R1171	0790065	CHIP RESISTOR 120KOHM+-5% 1/16W
R1172	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DESCRIPTION
R1173	0790065	CHIP RESISTOR 120KOHM+-5% 1/16W
R1174	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R1175	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R1176	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R1177	0104553	CHIP RESISTOR 15KOHM+-1% 1/16W
R1178	0104552	CHIP RESISTOR 6.8KOHM+-1% 1/16W
R1179	0104538	CHIP RESISTOR 5.1KOHM+-1% 1/16W
R1180	0790068	CHIP RESISTOR 220KOHM+-5% 1/16W
R1181	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R1182	0790069	CHIP RESISTOR 0.27MOHM+-5% 1/16W
R1183	0104562	CHIP RESISTOR 39KOHM+-1% 1/16W
R1185	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R1186	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R1188	0790041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R1189	0790031	CHIP RESISTOR 330 OHM+-5% 1/16W
R1190	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R1191	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1193	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R1194	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R1195	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R1197	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R1198	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R1206	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1207	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R1208	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R1211	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1217	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R1218	0104557	CHIP RESISTOR 13KOHM+-1% 1/16W
R1219	0104551	CHIP RESISTOR 1.65KOHM+-1% 1/16W
R1220	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1221	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1301	0104537	CHIP RESISTOR 3.6KOHM+-1% 1/16W
R1302	0104524	CHIP RESISTOR 5.49KOHM+-1% 1/16W
R1304	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R1306	0105193	CHIP RESISTOR 1.8KOHM+-0.5% 1/16W
R1307	0105198	CHIP RESISTOR 30KOHM+-0.5% 1/16W
R1311	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1316	0790005	CHIP RESISTOR 3.9OHM+-5% 1/16W
R1317	0790005	CHIP RESISTOR 3.9OHM+-5% 1/16W
R1318	0790032	CHIP RESISTOR 390 OHM+-5% 1/16W
R1319	0104559	CHIP RESISTOR 4.7KOHM+-1% 1/16W
R1321	0104559	CHIP RESISTOR 4.7KOHM+-1% 1/16W
R1322	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1323	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1324	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1325	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1326	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1328	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
RT0101	5040163	TRIMMER
RT0102	5040161	SEMI VARIABLE 2.2KOHM
RT0203	5040205	SEMI VARIABLE 22KOHM
RT0204	5040205	SEMI VARIABLE 22KOHM
RT0205	5040204	SEMI VARIABLE 10KOHM
RT0206	5040203	SEMI VARIABLE 4.7KOHM
RT0207	5040203	SEMI VARIABLE 4.7KOHM
RT0209	5040204	SEMI VARIABLE 10KOHM
RT0210	5040201	SEMI VARIABLE 470OHM
RT0211	5040203	SEMI VARIABLE 4.7KOHM
RT0212	5040202	SEMI VARIABLE 2.2KOHM
RT0215	5040204	SEMI VARIABLE 10KOHM
RT0216	5040205	SEMI VARIABLE 22KOHM
RT0301	5040165	TRIMMER
RT0302	5040163	TRIMMER
RT0401	5040208	SEMI VARIABLE 47KOHM
RT0402	5040208	SEMI VARIABLE 47KOHM

SYMBOL-NO	P-NO	DESCRIPTION
D0001	5382221	LED PLT-462T3
D0205	5337422	DIODE DA221
D0301	5337352	DIODE MA132WA
D0303	5337351	DIODE MA132WK
D0304	5337352	DIODE MA132WA
D0305	5337351	DIODE MA132WK
D0551	5337391	DIODE D1FS4
D0552	5337371	DIODE SB07-03C
D0556	5337353	DIODE MA132K
D0557	5337371	DIODE SB07-03C
D0601	5337422	DIODE DA221
D0902	5337351	DIODE MA132WK
D0903	5337411	DIODE HSM2838C
D0912	5337351	DIODE MA132WK
D0913	5337352	DIODE MA132WA
D0914	5337351	DIODE MA132WK
D0915	5337001	DIODE 1SR143
D0916	5337352	DIODE MA132WA
D0920	5337412	DIODE HSM2836C
D0921	5337422	DIODE DA221
D0922	5337351	DIODE MA132WK
D1101	5337641	DIODE HSM107S
D1102	5337501	DIODE HVM17
D1103	5337353	DIODE MA132K
D1104	5337451	DIODE RB715F
D1106	5337353	DIODE MA132K
D1107	5337353	DIODE MA132K
D1108	5337351	DIODE MA132WK
D1109	5337351	DIODE MA132WK
D1305	5337422	DIODE DA221
IC0101	1366631	IC HA118189MP
IC0201	1366921	IC HA118192F
IC0202	1366381	IC CXL1506N
IC0203	1359591	IC CXL5508M-T3
IC0204	1351492	IC MM1029AF
IC0207	1352032	IC NJM2249M
IC0301	1351991	IC CXL1203N
IC0401	1366371	IC HA118196F
IC0402	1366601	IC LA7471M
IC0551	1366251	IC TL1464IPT
IC0601	1359861	IC XR1080CV
IC0602	1366392	IC LB1885M
IC0603	1366651	IC BA6417F
IC0901	1366814	IC CXP80724-186Q
IC0902	1352582	IC S-84206F
IC0903	1366081	IC HD74HCT125T
IC0904	1366611	IC XLU5949FS
IC0905	1352384	IC NJM2903V
IC1101	1366681	IC HA118184F
IC1102	1354723	IC HD49318F
IC1103	1366691	IC HG51B015TF
IC1104	1354694	IC HG51A017FB
IC1105	1396032	IC HD6433378V06F
IC1106	1366951	IC S-2939GIF10G-TF
IC1107	5300161	IC NJM3404AM
IC1108	1359931	IC TC4W66F
IC1109	1365191	IC NJM3414M
IC1110	1366731	IC UPD16508GB-2A5
IC1301	1366851	IC SC78014GC-550-AB8
IC1302	1366831	IC SC402152FB
IC1303	1366801	IC XPC17A85VMEL
IC1304	1366171	IC MB88352PFV
IC1305	1352091	IC MM1036
IC1306	1366071	IC LM324DB
IC1307	1366061	IC SN74HCT04ADB

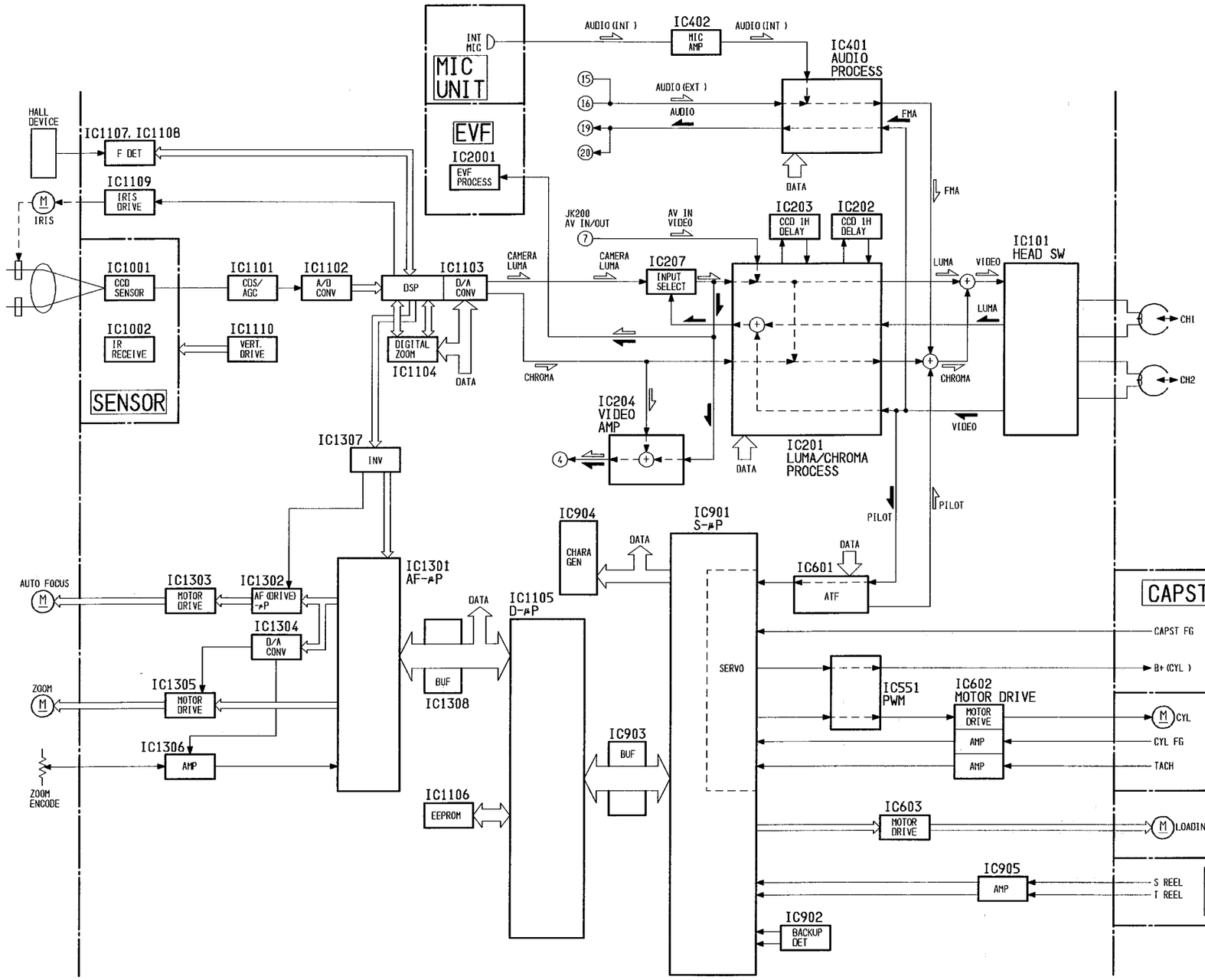
SYMBOL-NO	P-NO	DESCRIPTION
IC1308	1366081	IC HD74HCT125T
Q0001	1322341	TRANSISTOR PT4810F
Q0002	5327521	PHOTO TRANSISTOR SPI-315-C
Q0003	5327521	PHOTO TRANSISTOR SPI-315-C
Q0004	1322341	TRANSISTOR PT4810F
Q0101	1323541	TRANSISTOR FMC5
Q0102	1323231	TRANSISTOR 2SB1462
Q0103	1323181	TRANSISTOR XP4213
Q0106	1323541	TRANSISTOR FMC5
Q0107	1323231	TRANSISTOR 2SB1462
Q0108	1323321	TRANSISTOR 2SD2216
Q0109	5326471	TRANSISTOR 2SB1218 (R)
Q0110	1323171	TRANSISTOR UN9213
Q0111	1323321	TRANSISTOR 2SD2216
Q0114	1323321	TRANSISTOR 2SD2216
Q0116	1323321	TRANSISTOR 2SD2216
Q0117	1323321	TRANSISTOR 2SD2216
Q0123	1323231	TRANSISTOR 2SB1462
Q0124	1323231	TRANSISTOR 2SB1462
Q0125	1323321	TRANSISTOR 2SD2216
Q0126	1323321	TRANSISTOR 2SD2216
Q0129	1323321	TRANSISTOR 2SD2216
Q0133	1323321	TRANSISTOR 2SD2216
Q0134	1323321	TRANSISTOR 2SD2216
Q0135	1323541	TRANSISTOR FMC5
Q0136	1323171	TRANSISTOR UN9213
Q0141	1323231	TRANSISTOR 2SB1462
Q0142	1323231	TRANSISTOR 2SB1462
Q0202	1323321	TRANSISTOR 2SD2216
Q0203	1323173	TRANSISTOR UN9212
Q0208	1323171	TRANSISTOR UN9213
Q0212	1323172	TRANSISTOR UN9113
Q0213	1323301	TRANSISTOR 2SB1219
Q0214	1323171	TRANSISTOR UN9213
Q0215	1323231	TRANSISTOR 2SB1462
Q0216	1323231	TRANSISTOR 2SB1462
Q0217	1323231	TRANSISTOR 2SB1462
Q0218	1323321	TRANSISTOR 2SD2216
Q0219	1323231	TRANSISTOR 2SB1462
Q0220	1323171	TRANSISTOR UN9213
Q0240	1323231	TRANSISTOR 2SB1462
Q0241	1323171	TRANSISTOR UN9213
Q0248	1323171	TRANSISTOR UN9213
Q0249	1323171	TRANSISTOR UN9213
Q0250	1323231	TRANSISTOR 2SB1462
Q0254	1323321	TRANSISTOR 2SD2216
Q0256	5326103	TRANSISTOR FMS1
Q0260	1323171	TRANSISTOR UN9213
Q0261	1323361	TRANSISTOR XP1501
Q0263	1323171	TRANSISTOR UN9213
Q0264	1323321	TRANSISTOR 2SD2216
Q0265	1323171	TRANSISTOR UN9213
Q0266	1323172	TRANSISTOR UN9113
Q0267	1323171	TRANSISTOR UN9213
Q0268	5326681	TRANSISTOR XN1C301
Q0301	1323171	TRANSISTOR UN9213
Q0302	1323172	TRANSISTOR UN9113
Q0303	1323321	TRANSISTOR 2SD2216
Q0304	1323321	TRANSISTOR 2SD2216
Q0307	1323171	TRANSISTOR UN9213
Q0308	1323171	TRANSISTOR UN9213
Q0309	1323321	TRANSISTOR 2SD2216
Q0311	1323231	TRANSISTOR 2SB1462
Q0401	1323321	TRANSISTOR 2SD2216
Q0405	1323321	TRANSISTOR 2SD2216
Q0407	1323231	TRANSISTOR 2SB1462
Q0551	5326811	TRANSISTOR 2SB1001
Q0552	1308011	TRANSISTOR MPL1
Q0553	1308011	TRANSISTOR MPL1
Q0554	1308011	TRANSISTOR MPL1
Q0555	1323781	TRANSISTOR 2SK1764
Q0602	1323321	TRANSISTOR 2SD2216
Q0603	1323171	TRANSISTOR UN9213
Q0605	1323171	TRANSISTOR UN9213
Q0608	1323321	TRANSISTOR 2SD2216
Q0901	1323231	TRANSISTOR 2SB1462
Q0902	1323081	TRANSISTOR 2SA1036K
Q0903	1323321	TRANSISTOR 2SD2216
Q0904	1323321	TRANSISTOR 2SD2216
Q0905	1323231	TRANSISTOR 2SB1462
Q0906	1323321	TRANSISTOR 2SD2216
Q0907	1323321	TRANSISTOR 2SD2216
Q0908	1323321	TRANSISTOR 2SD2216
Q0912	1323171	TRANSISTOR UN9213
Q0915	1323321	TRANSISTOR 2SD2216
Q0916	5326502	TRANSISTOR 2SD1766 (R)
Q0917	1323321	TRANSISTOR 2SD2216
Q0918	1323252	TRANSISTOR XP4501
Q0919	1323231	TRANSISTOR 2SB1462
Q1100	1323171	TRANSISTOR UN9213
Q1101	1323231	TRANSISTOR 2SB1462
Q1102	1323231	TRANSISTOR 2SB1462
Q1103	1323172	TRANSISTOR UN9113
Q1104	1323171	TRANSISTOR UN9213
Q1105	5328192	TRANSISTOR 2SC2462LD
Q1106	1323253	TRANSISTOR XP4401
Q1107	1323321	TRANSISTOR 2SD2216
Q1109	1323231	TRANSISTOR 2SB1462
Q1110	1323171	TRANSISTOR UN9213
Q1112	5328211	TRANSISTOR 2SA1121C(SC)
Q1113	1323171	TRANSISTOR UN9213
Q1301	5328794	TRANSISTOR DTA143EK
ZD0901	5339213	DIODE RD2.7MB2
T0551	5148331	TRANSFORMER
L0101	0773094	CHOKE COIL 100UH+-10%
L0104	0773124	CHOKE COIL 27UH+-5%
L0105	0773094	CHOKE COIL 100UH+-10%
L0106	0773111	CHOKE COIL 2.7 UH
L0108	0773136	CHOKE COIL 220UH+-5%
L0109	0773134	CHOKE COIL 150UH+-5%
L0110	0773116	CHOKE COIL 6.8UH+-10%
L0111	0773097	CHOKE COIL 330UH+-10%
L0113	5159177	COIL 470UH
L0114	0773134	CHOKE COIL 150UH+-5%
L0115	0773136	CHOKE COIL 220UH+-5%
L0116	0773135	CHOKE COIL 180UH+-5%
L0118	0773118	CHOKE COIL 10UH+-5%
L0119	0773113	COIL 3.9UH
L0124	0773094	CHOKE COIL 100UH+-10%
L0125	0773094	CHOKE COIL 100UH+-10%
L0201	0773092	CHOKE COIL 47UH+-10%
L0203	0773013	COIL 8.2KUH
L0204	0773118	CHOKE COIL 10UH+-5%
L0205	0773135	CHOKE COIL 180UH+-5%
L0206	0773089	CHOKE COIL 22UH
L0208	0773133	CHOKE COIL 120UH+-5%
L0209	0773089	CHOKE COIL 22UH
L0210	0773129	CHOKE COIL 68UH+-5%
L0211	0773089	CHOKE COIL 22UH
L0215	0773092	CHOKE COIL 47UH+-10%

SYMBOL-NO	P-NO	DESCRIPTION
L0218	0773131	CHOKE COIL 82UH+-5%
L0301	0773094	CHOKE COIL 100UH+-10%
L0401	0773092	CHOKE COIL 47UH+-10%
L0402	0773094	CHOKE COIL 100UH+-10%
L0551	5129321	CHOKE COIL
L0552	5129321	CHOKE COIL
L0553	5129322	CHOKE COIL
L0554	5129321	CHOKE COIL
L0555	0773087	CHOKE COIL 10UH+-10%
L0556	5129321	CHOKE COIL
L0557	5129323	CHOKE COIL
L0560	5129323	CHOKE COIL
L0563	5129323	CHOKE COIL
L0564	0773087	CHOKE COIL 10UH+-10%
L0565	0773094	CHOKE COIL 100UH+-10%
L0566	0773094	CHOKE COIL 100UH+-10%
L0567	0773087	CHOKE COIL 10UH+-10%
L0568	0773087	CHOKE COIL 10UH+-10%
L0602	0773087	CHOKE COIL 10UH+-10%
L0901	0773081	CHOKE COIL 1UH
L0902	0773092	CHOKE COIL 47UH+-10%
L0903	0773094	CHOKE COIL 100UH+-10%
L0904	0773088	CHOKE COIL 15UH
L0907	0773121	CHOKE COIL 15UH+-5%
L0909	0773087	CHOKE COIL 10UH+-10%
L0910	0773094	CHOKE COIL 100UH+-10%
L1102	0773087	CHOKE COIL 10UH+-10%
L1103	0773087	CHOKE COIL 10UH+-10%
L1105	0773087	CHOKE COIL 10UH+-10%
L1106	0773087	CHOKE COIL 10UH+-10%
L1107	0773087	CHOKE COIL 10UH+-10%
L1108	0773087	CHOKE COIL 10UH+-10%
L1109	0773094	CHOKE COIL 100UH+-10%
L1301	0773087	CHOKE COIL 10UH+-10%
L1302	0773087	CHOKE COIL 10UH+-10%
L1303	0773089	CHOKE COIL 22UH
LI0901	5761771	BATTERY, BACK UP
X0201	1930052	CRYSTAL
X0601	1930172	CRYSTAL
X0901	1930172	CRYSTAL
X0902	1930031	CRYSTAL
X1101	1930162	CRYSTAL
X1102	1930011	CRYSTAL
BL0394	5172541	FILTER
BL0395	5172541	FILTER
BL0396	5172541	FILTER
BL0397	5172541	FILTER
BL0399	5172541	FILTER
CN0005	1880142	CONNECTOR
CN0901	5845856	CONNECTOR
CN0902	5847082	CONNECTOR
CP0202	5172812	FILTER
CP0203	5172811	FILTER
CP0204	5172654	FILTER, BAND PASS
CP0307	5172653	FILTER, BAND PASS
CP0402	5172424	FILTER
CP1102	5172802	FILTER, LOW PASS
F0551	5723232	FUSE
F0552	5723233	FUSE, 0.8A
JK0200	5695291	SOCKT
PG0001	5666921	MINI PLUG
PG0101	5668975	PLUG
PG0400	5668671	MINI PLUG
PG0402	5669151	MINI PLUG
PG0551	1830321	PLUG

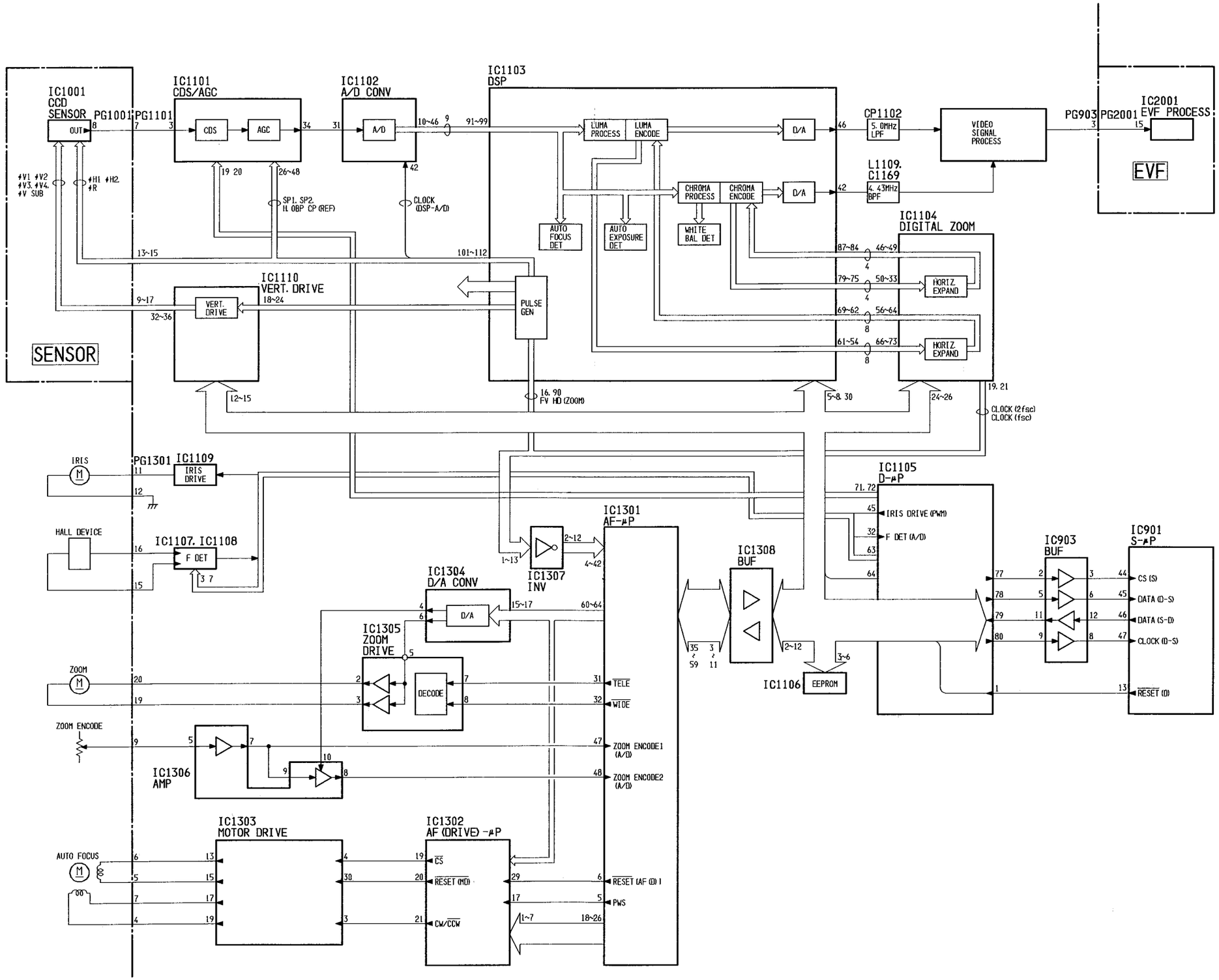
SYMBOL-NO	P-NO	DESCRIPTION
PG0601	5692362	MINI PLUG
PG0602	5666929	PLUG
PG0603	5668753	MINI PLUG
PG0604	5668671	MINI PLUG
PG0901	5662766	PLUG
PG0902	5669191	PLUG
PG0903	5669193	MINI PLUG
PG0904	5668671	MINI PLUG
PG0905	5669033	PLUG
PG0906	1830351	PLUG
PG0907	5669033	PLUG
PG1101	1830341	PLUG
PG1301	5669104	PLUG
S0003	5636171	SWITCH
S0004	5636171	SWITCH
S0005	5636171	SWITCH
S0006	5635331	SWITCH
S0007	5613522	MECHANISM STATE SWITCH
S0901	1741063	SWITCH
S0902	1742021	SWITCH
S0903	1742011	SWITCH
S0904	1742011	SWITCH
S0905	1742011	SWITCH
S0906	1742011	SWITCH
S0907	1742011	SWITCH
S0909	1742011	SWITCH
SW0908	5635612	SWITCH
		CAMERA SECTION
C1001	0806167	ELECTROLYTIC 47UF 4V
C1002	0806147	ELECTROLYTIC 3.3UF 35V
C1003	0806169	ELECTROLYTIC 47UF 16V
C1004	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1005	0806164	ELECTROLYTIC CHIP 33UF+-20% 25V
C1006	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1007	0893114	CERAMIC CHIP 12PF+-5% 50V
R1001	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R1002	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R1003	0790035	CHIP RESISTOR 680 OHM+-5% 1/16W
R1004	0790067	CHIP RESISTOR 180KOHM+-5% 1/16W
R1005	0790056	CHIP RESISTOR 27KOHM+-5% 1/16W
R1006	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R1007	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R1008	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R1012	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
D1001	5382911	DIDOE LT1D82A
IC1001	5318471	CCD IMAGE DEVICE ICX055AK-6
IC1002	5317391	LED MODULE
Q1001	5328221	TRANSISTOR 2SC2620-QC
PG1001	1830342	PLUG
		ELECTRONIC VIEWFINDER SECTION
C2001	0806169	ELECTROLYTIC 47UF 16V
C2002	0806169	ELECTROLYTIC 47UF 16V
C2003	0806146	ELECTROLYTIC 2.2UF 50V
C2004	02684373	POLYPROPYLENE 4700PF+-5%50V
C2005	0256871	ELECTROLYTIC 47UF 25V
C2006	0249655	CERAMIC CHIP 1000PF+-10% 1000V
C2007	0249656	CERAMIC CHIP 1000PF+-10% 500V
C2008	0806146	ELECTROLYTIC 2.2UF 50V
C2009	0893086	CERAMIC CHIP 0.1UF+80-20% 50V
C2011	0209852	CERAMIC CHIP 180PF+-5% 50V
C2012	0893086	CERAMIC CHIP 0.1UF+80-20% 50V

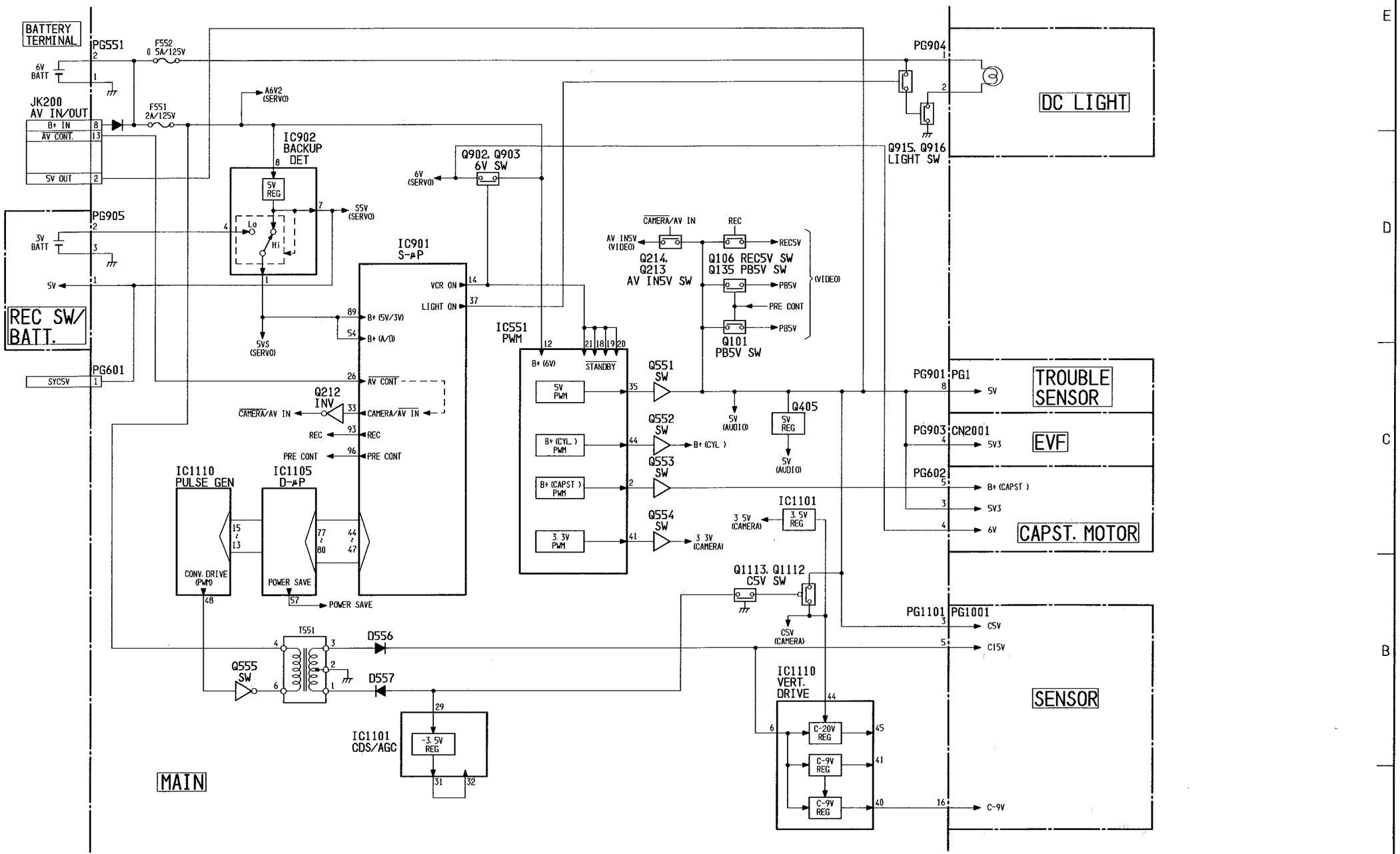
SYMBOL-NO	P-NO	DESCRIPTION
C2013	0893086	CERAMIC CHIP 0.1UF+80-20% 50V
C2014	0268521	MYLAR 0.1UF+-10% 50V
C2015	0202151	CERAMIC CHIP 2200PF+-5% 50V
C2016	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C2017	0806145	ELECTROLYTIC 1UF 50V
C2018	0893062	CERAMIC CHIP 1UF+80-20% 16V
R2001	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R2002	0103869	CHIP RESISTOR 150KOHM+-5% 0.1W
R2003	0103876	CHIP RESISTOR 560KOHM+-5% 0.1W
R2004	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R2005	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R2006	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R2007	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R2008	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R2009	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R2011	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R2012	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R2013	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R2014	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R2015	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R2016	0103814	CHIP RESISTOR 3.9 OHM+-10% 0.1W
R2017	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R2018	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R2019	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R2020	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R2021	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R2022	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R2024	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R2025	01038743	CHIP RESISTOR 390KOHM+-5% 0.1W
R2026	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R2027	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
RT2001	5035204	SEMI VARIABLE 2.2MOHM
RT2002	5030251	SEMI VARIABLE 1MOHM
RT2003	5040103	SEMI VARIABLE 470 OHM
D2001	5337133	DIODE MA141K
D2002	5337321	DIODE MA199
IC2001	1365881	IC HA118179F
Q2001	5323831	TRANSISTOR 2SD974
Q2002	5326682	TRANSISTOR XN1B301
⚠T2001	5240566	TRANSFORMER
⚠TF2001	5721352	FUSE
L2001	0773003	COIL 47UH
L2002	5244017	COIL
CN2001	5844998	CONNECTOR
⚠CS2001	5887003	SOCKET, CRT
PG2001	5669631	CONNECTOR
D101	5382421	DIODE S1WB60
D102	5382651	DIODE SERA91-02
D103	5382651	DIODE SERA91-02
D201	4112771	DIODE ESAC82M006
D202	5336851	DIODE MA165
D203	4112781	DIODE MA151WK
IC101	4112791	IC FA5311S
IC201	4112801	IC AN8004
IC202	1352781	IC AN6537S
IC203	4112811	IC TMP47C241J51
PC101	4113101	PHOTO COUPLER TLP721F
Q101	4112831	TRANSISTOR 2SK1572
Q201	1322381	TRANSISTOR 2SB1299
Q202	4112841	TRANSISTOR 2SD1302
Q203	5326971	TRANSISTOR 2SD601A
Q204	5326971	TRANSISTOR 2SD601A
Q205	5326971	TRANSISTOR 2SD601A
Q206	4112851	TRANSISTOR 2SD1328
ZD101	4112882	DIODE RD4.7JSB
ZD102	4112881	DIODE RD24JSB
ZD103	4112881	DIODE RD24JSB
ZD201	4112871	DIODE RD6.2EB
ZD202	4112871	DIODE RD6.2EB
ZD203	4112882	DIODE RD4.7JSB
ZD204	4112861	DIODE MA8051M
ZD205	1331331	DIODE MA3180M
F101	4115301	FUSE 250V 1.6A

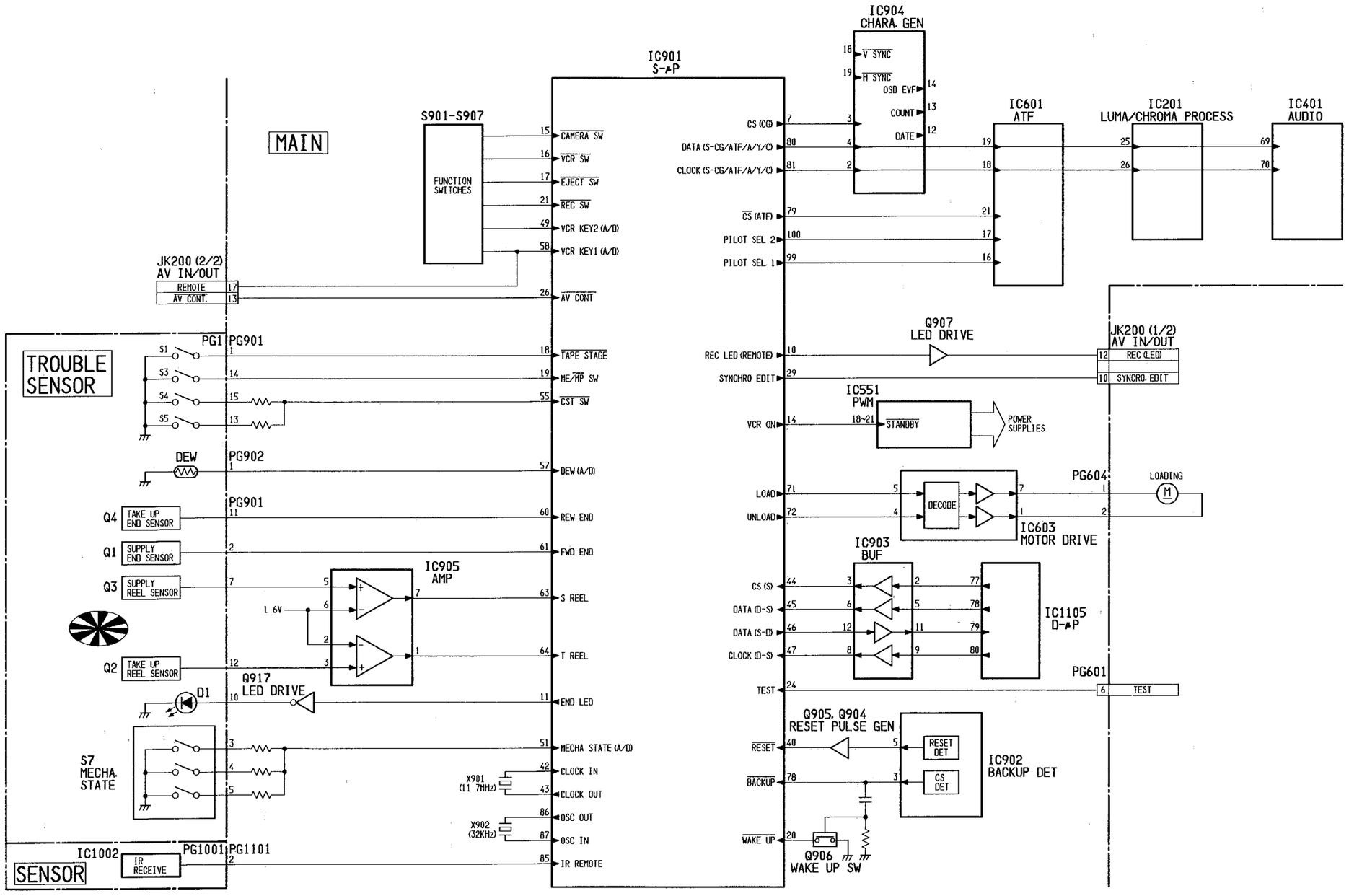
CHAPTER 8
BLOCK DIAGRAMS
1. OVERALL

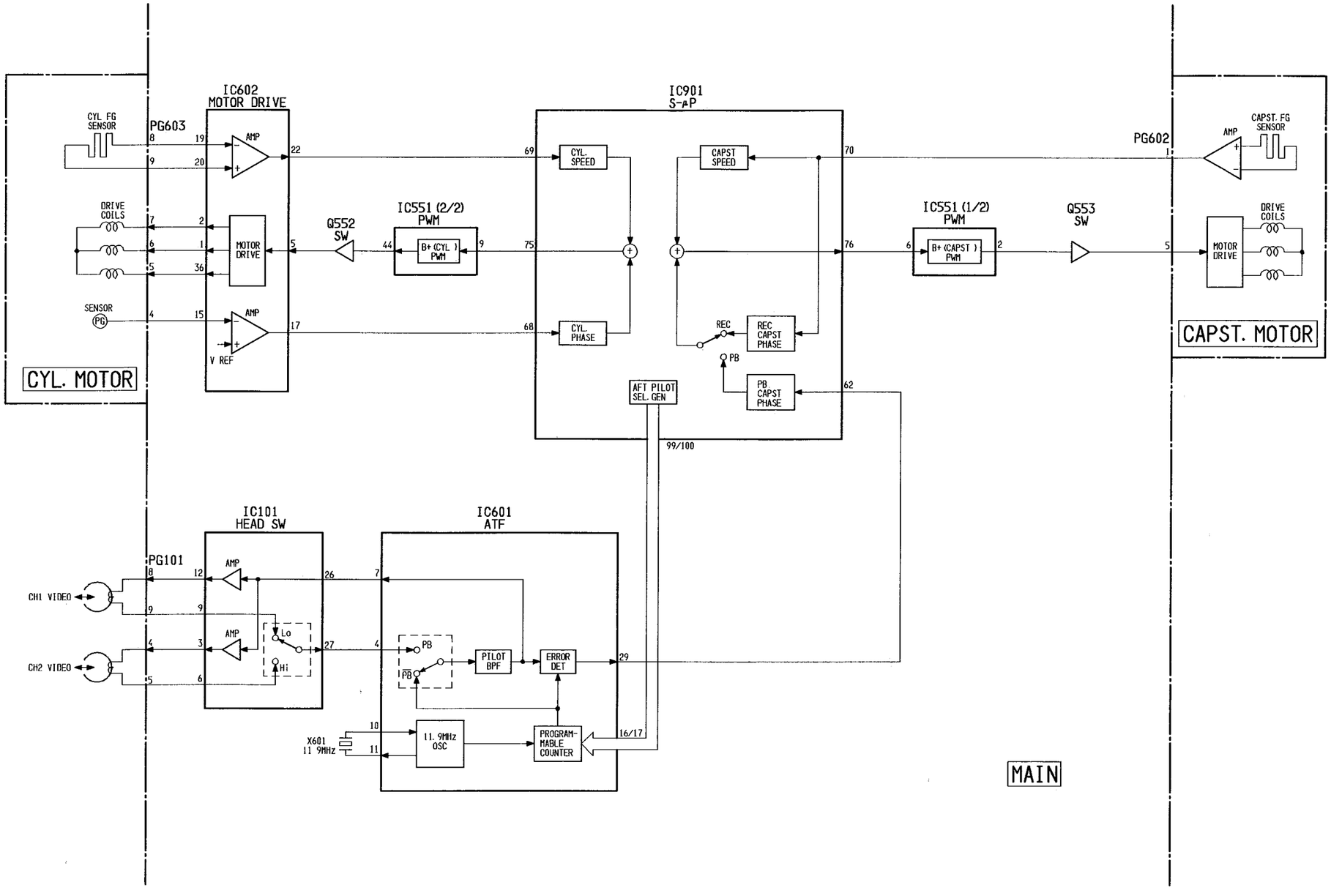


2. CAMERA

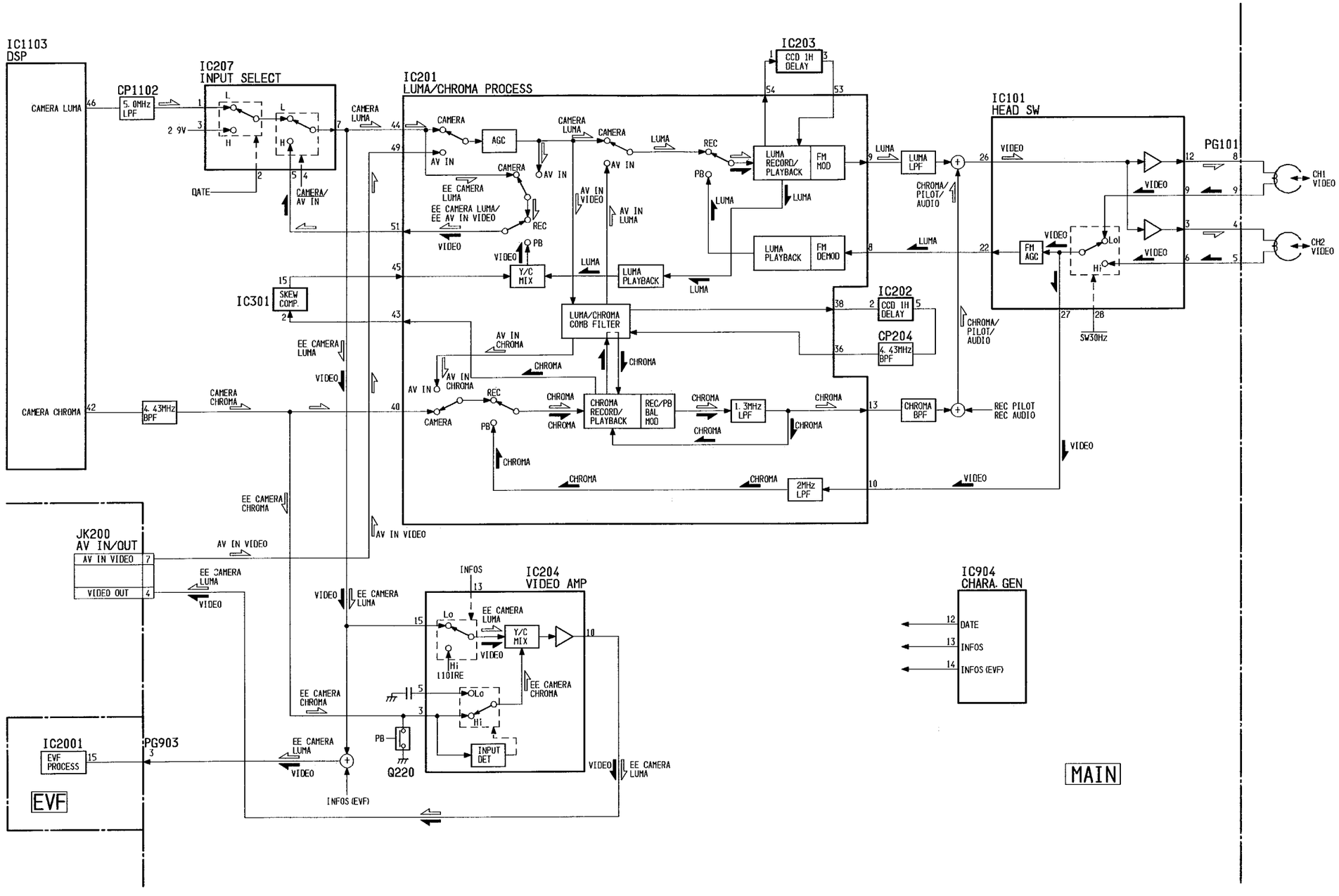

IC1001
CCD
SENSOR
OUT
PG1001
PG1101
IC1101
CDS/AGC
CDS
AGC
IC1102
A/D CONV
A/D
IC1103
DSP
LUMA PROCESS
LUMA ENCODE
D/A
CHROMA PROCESS
CHROMA ENCODE
AUTO FOCUS DET
AUTO EXPOSURE DET
WHITE BAL DET
CP1102
5.0MHz LPF
L1109.
C1169
4.43MHz BPF
VIDEO SIGNAL PROCESS
PG903
PG2001
IC2001
EVF PROCESS
EVF
IC1104
DIGITAL ZOOM
HORIZ. EXPAND
HORIZ. EXPAND
IC1110
VERT. DRIVE
VERT. DRIVE
PULSE GEN
SENSOR
φV1 φV2 φV3 φV4 φV SUB
φH1 φH2 φR
SP1. SP2. 1L OBP CP (REF)
CLOCK (DSP-A/D)
16. 90 FV HD (ZOOM)
CLOCK (2fsc)
CLOCK (fsc)
IRIS
PG1301
IC1109
IRIS DRIVE
HALL DEVICE
IC1107. IC1108
F DET
IC1105
D-μP
IRIS DRIVE (PWM)
F DET (A/D)
IC1307
INV
IC1301
AF-μP
IC1304
D/A CONV
D/A
IC1305
ZOOM DRIVE
DECODE
ZOOM
TELE
WIDE
ZOOM ENCODE
IC1306
AMP
ZOOM ENCODE1 (A/D)
ZOOM ENCODE2 (A/D)
IC1308
BUF
IC1106
EEPROM
IC903
BUF
IC901
S-μP
CS (S)
DATA (D-S)
DATA (S-D)
CLOCK (D-S)
RESET (D)
IC1303
MOTOR DRIVE
IC1302
AF (DRIVE) -μP
AUTO FOCUS
CS
RESET (MD)
CW/CCW
RESET (AF (D))
PWS

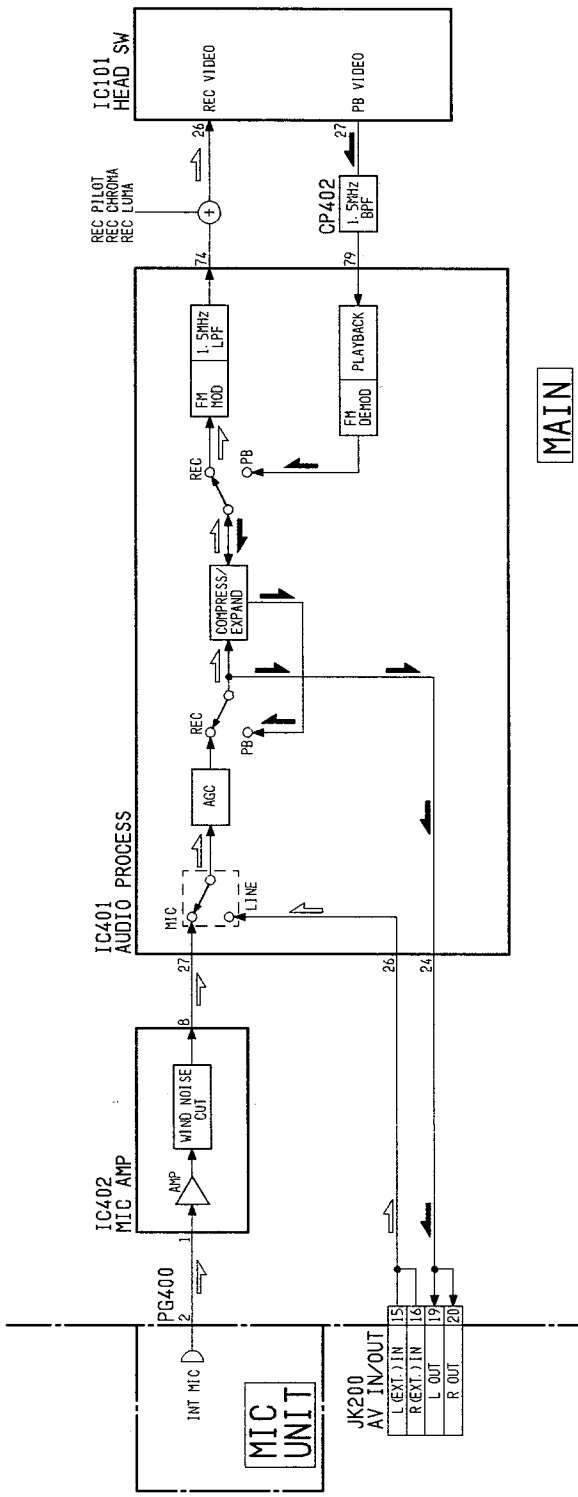

BATTERY TERMINAL
PG551
F552 0.5A/125V
6V BATT
F551 2A/125V
JK200 AV IN/OUT
B+ IN
AV CONT.
5V OUT
A6V2 (SERVO)
IC902 BACKUP DET
5V REG
5V (SERVO)
Lo
Hi
PG905
3V BATT
5V
REC SW/ BATT.
PG601
SYC5V
5VS (SERVO)
IC901 S-μP
VCR ON
LIGHT ON
B+ (5V/3V)
B+ (A/D)
AV CONT
CAMERA/AV IN
REC
PRE CONT
Q212 INV
IC1110 PULSE GEN
IC1105 D-μP
CONV. DRIVE (PWM)
POWER SAVE
IC551 PWM
B+ (6V)
STANDBY
5V PWM
B+ (CYL.) PWM
B+ (CAPST.) PWM
3.3V PWM
Q551 SW
Q552 SW
Q553 SW
Q554 SW
5V (AUDIO)
Q405
5V REG
B+ (CYL.)
3.3V (CAMERA)
IC1101
3.5V REG
3.5V (CAMERA)
Q902, Q903 6V SW
6V (SERVO)
Q915, Q916 LIGHT SW
PG904
DC LIGHT
Q214, Q213 AV IN5V SW
Q106 REC5V SW
Q135 PB5V SW
Q101 PB5V SW
AV IN5V (VIDEO)
REC5V
PB5V
PRE CONT
(VIDEO)
Q1113, Q1112 C5V SW
C5V (CAMERA)
PG901 PG1
TROUBLE SENSOR
PG903 CN2001
EVF
PG602
B+ (CAPST.)
3V3
6V
CAPST. MOTOR
PG1101 PG1001
C5V
C15V
SENSOR
IC1110 VERT. DRIVE
C-20V REG
C-9V REG
C-9V
T551
D556
D557
Q555 SW
IC1101 CDS/AGC
-3.5V REG
MAIN


MAIN
TROUBLE SENSOR
SENSOR
IC901 S-μP
IC904 CHARA. GEN
V SYNC
H SYNC
OSD EVF
COUNT
DATE
CS (CG)
DATA (S-CG/ATF/A/Y/C)
CLOCK (S-CG/ATF/A/Y/C)
IC601 ATF
IC201 LUMA/CHROMA PROCESS
IC401 AUDIO
S901-S907
FUNCTION SWITCHES
CAMERA SW
VCR SW
EJECT SW
REC SW
VCR KEY2 (A/D)
VCR KEY1 (A/D)
JK200 (2/2) AV IN/OUT
REMOTE
AV CONT.
AV CONT
CS (ATF)
PILOT SEL 2
PILOT SEL 1
PG1 PG901
S1
S3
S4
S5
TAPE STAGE
ME/MP SW
CST SW
Q907 LED DRIVE
REC LED (REMOTE)
SYNCHRO EDIT
JK200 (1/2) AV IN/OUT
REC (LED)
SYNCRO. EDIT
IC551 PWM
VCR ON
STANDBY
POWER SUPPLIES
DEW
PG902
DEW (A/D)
PG901
Q4 TAKE UP END SENSOR
REW END
Q1 SUPPLY END SENSOR
FWD END
Q3 SUPPLY REEL SENSOR
IC905 AMP
1.6V
S REEL
T REEL
Q2 TAKE UP REEL SENSOR
D1
Q917 LED DRIVE
END LED
S7 MECHA. STATE
MECHA STATE (A/D)
X901 (11.7MHz)
CLOCK IN
CLOCK OUT
X902 (32KHz)
OSC OUT
OSC IN
IC1002
IR RECEIVE
PG1001
PG1101
IR REMOTE
LOAD
UNLOAD
DECODE
PG604
LOADING
IC603 MOTOR DRIVE
IC903 BUF
CS (S)
DATA (D-S)
DATA (S-D)
CLOCK (D-S)
IC1105 D-μP
PG601
TEST
Q905, Q904 RESET PULSE GEN
RESET
BACKUP
WAKE UP
RESET DET
CS DET
IC902 BACKUP DET
Q906 WAKE UP SW

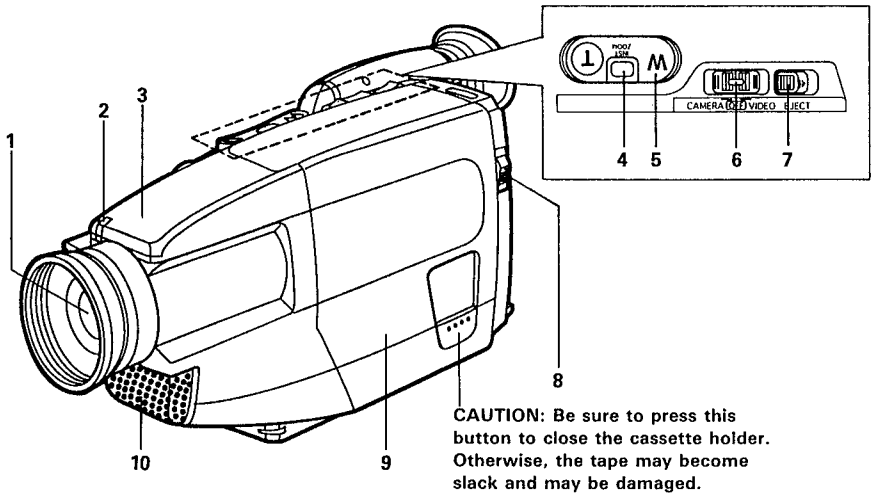

IC602
MOTOR DRIVE
IC901
S-μP
CYL FG SENSOR
PG603
AMP
DRIVE COILS
MOTOR DRIVE
SENSOR
PG
V REF
CYL. MOTOR
Q552 SW
IC551 (2/2) PWM
B+ (CYL) PWM
CYL. SPEED
CYL. PHASE
CAPST SPEED
REC
REC CAPST PHASE
PB
PB CAPST PHASE
AFT PILOT SEL. GEN
99/100
IC551 (1/2) PWM
B+ (CAPST) PWM
Q553 SW
PG602
CAPST. FG SENSOR
CAPST. MOTOR
IC101
HEAD SW
PG101
CH1 VIDEO
CH2 VIDEO
Lo
Hi
IC601
ATF
PILOT BPF
ERROR DET
X601
11.9MHz
11.9MHz OSC
PROGRAM-MABLE COUNTER
16/17
MAIN

6. VIDEO


IC1103
DSP
CAMERA LUMA
CAMERA CHROMA
CP1102
5.0MHz LPF
IC207
INPUT SELECT
2.9V
DATE
CAMERA/ AV IN
IC201
LUMA/CHROMA PROCESS
AGC
AV IN
EE CAMERA LUMA
EE CAMERA LUMA/ EE AV IN VIDEO
REC
PB
VIDEO
Y/C MIX
LUMA PLAYBACK
IC301
SKEW COMP.
LUMA/CHROMA COMB FILTER
AV IN CHROMA
EE CAMERA CHROMA
4.43MHz BPF
CHROMA RECORD/ PLAYBACK
REC/PB BAL MOD
1.3MHz LPF
2MHz LPF
IC203
CCD 1H DELAY
LUMA RECORD/ PLAYBACK
FM MOD
FM DEMOD
LUMA LPF
IC202
CCD 1H DELAY
CP204
4.43MHz BPF
CHROMA BPF
CHROMA/ PILOT/ AUDIO
REC PILOT REC AUDIO
IC101
HEAD SW
FM AGC
SW30Hz
PG101
CH1 VIDEO
CH2 VIDEO
JK200
AV IN/OUT
AV IN VIDEO
VIDEO OUT
IC204
VIDEO AMP
INFOS
INPUT DET
Q220
IC2001
EVF PROCESS
PG903
EVF
INFOS (EVF)
IC904
CHARA. GEN
DATE
INFOS
INFOS (EVF)
MAIN

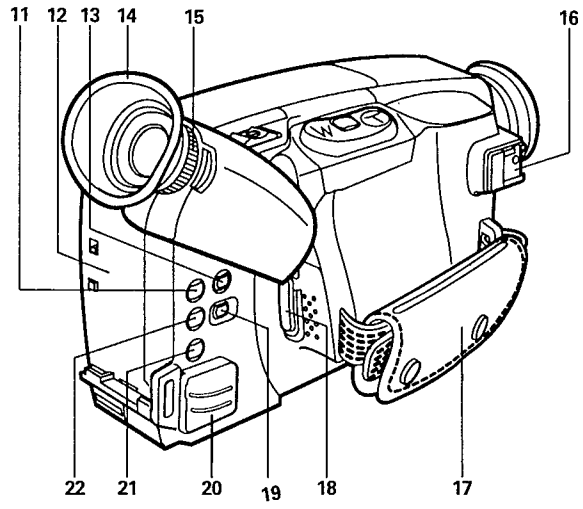

IC101
HEAD SW
REC VIDEO
PB VIDEO
26
27
REC PILOT
REC CHROMA
REC LUMA
CP402
1.5MHz
BPF
74
79
FM
MOD
1.5MHz
LPF
FM
DEMOD
PLAYBACK
REC
PB
COMPRESS/
EXPAND
AGC
MIC
LINE
IC401
AUDIO PROCESS
MAIN
27
26
24
8
IC402
MIC AMP
AMP
WIND NOISE
CUT
1
PG400
2
INT MIC
MIC
UNIT
JK200
AV IN/OUT
15
16
19
20
L (EXT.) IN
R (EXT.) IN
L OUT
R OUT

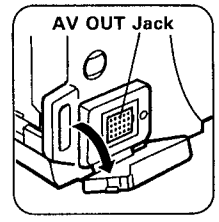
CONTROLS AND FUNCTIONS



CAUTION: Be sure to press this button to close the cassette holder. Otherwise, the tape may become slack and may be damaged.

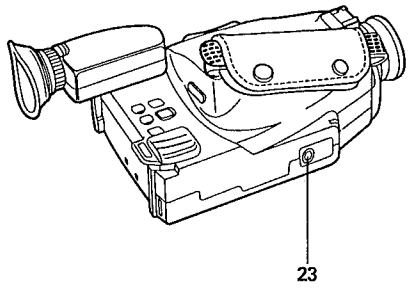
1. **Lens**
   F1 4 (6 ~ 48 mm) 8X power zoom lens features with auto focus and auto iris functions.
2. **Record Indicator**
   This indicator lights up to indicate that the camera/recorder is recording.
3. **Infrared Ray Receiving Section**
   Receives infrared rays from the remote controller.
4. **INST. ZOOM (Instant Zoom) Button**
   Use this button to magnify the image being recorded 1 5 times momentarily.
5. **Power Zoom Switch**
   This switch performs zooming electrically.
   "W": Picture becomes wider gradually
   "T": Picture becomes telescopic gradually
6. **OPERATE Switch**
   This turns the camera/recorder on and off and also switches between the camera and VTR modes
   Set the switch to "CAMERA" to turn the camera's power on and to "VIDEO" to turn the VTR's power
   Press and hold the small red button in the switch to switch it.
7. **EJECT Switch**
   Operates with OPERATE either on or off, if a power source is connected to the camera/recorder
8. **BATT EJECT (Battery Eject) Lever**
   Releases the battery (provided), external power adapter (provided) or battery housing (optional) attached to the camera/recorder.
9. **Cassette Holder**
   Slide EJECT switch to open the cassette holder. Be aware of the cassette direction when inserting
   NOTE: Power source must be connected to open the cassette holder
10. **Microphone**
    Sensitive to sounds coming from the direction in which the camera is pointed
11. **PLAY Button**
    Used for playback of tape
    NOTE: When the camera/recorder is in record/pause (stand-by) mode, pressing and holding this button will play the tape at normal
12. **Power Supply Attachment Section**
    Attach the battery (provided), external power adapter (provided) or bettery housing (optional) here

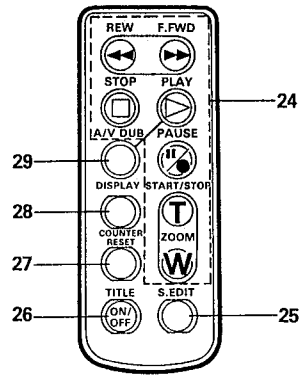




13. **F.FWD Button**
    Press this button during stop or rewind mode, and fast-forwarding starts Press the button during playback of tape, and the tape is played back in the forward direction approximately 7 times faster than the normal speed to confirm the recorded content Press PLAY button to return to normal playback mode or press STOP button to stop tape movement Also use F.FWD button when setting the date/time
    NOTE: You can also visually scan forward when the camera/recorder is in record/pause (stand-by) mode by pressing and holding this button
14. **Eye Cup**
    Pull out the eye cup all the way when using it and adjust the diopter control so that the subject is seen most clearly in the viewfinder
    Always push in the eye cup after use.
15. **Diopter Control**
    To use the electronic viewfinder, turn this control for your optimum focus adjustment.
16. **Camera Light Shoe**
    Used to attach the camera light
17. **Hand Strap**
    Adjust to best fit to your hand.
18. **Start/Stop Button**
    This button is used to control the camera/recorder. When this button is pressed with the camera/recorder set to the record/pause mode, the tape runs to start recording.
    When this button is pressed again, the tape stops and the camera/recorder enters the record/pause (stand-by) mode. This button may be also used to display a still picture during playback mode
19. **REW/REVIEW Button**
    Press this button during stop or fast forward mode, and fast-rewinding starts Press the button during playback of tape, and the tape is played back in the rewind direction approximately 5 times faster than the normal speed to confirm the recorded contents. Press PLAY button to return to normal playback mode or press STOP button to stop tape movement
    Also use this button to review the last few seconds of the tape you are recording.
    Use the REW/REVIEW button when setting the date/time.
    NOTE: You can also visually scan backward when the camera/recorder is in record/pause (stand-by) mode by pressing and holding this button
20. **AV OUT Jack (Behind the door)**
    Use the AV output cord (provided) or RF output adapter (optional) to connect this jack to a TV to view the pictures played back by the camera/recorder
21. **DATE Button**
    Press this button to display the date and time in the viewfinder. Whenever the date and time appear in the viewfinder, they will be recorded on the tape.
22. **STOP Button**
    The STOP button is used to stop playback, rewind, and fast forward operations. The STOP button has no effect during record operation.
    Also use STOP button when setting the date/time.

CONTROLS AND FUNCTIONS





23. Tripod Mount Screw
Use this screw to mount the camera/recorder on a tripod (generally available)

24. Camera/Recorder Control Buttons
These shaded buttons on the remote control function the same as those on the camera/recorder

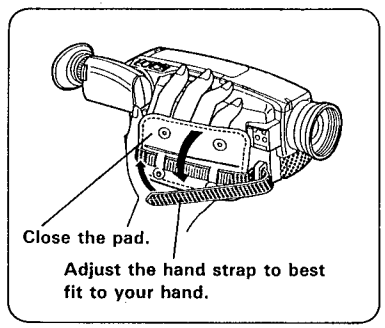
25. S.EDIT (Synchro Edit) Button (only on the remote controller)
Use this button to activate the synchro edit function for dubbing.

26 TITLE ON/OFF Button (only on the remote controller)
Use this button to store a title in memory or recall the stored title and record it superimposed on the picture being shot.

27. COUNTER RESET Button (only on the remote controller)
Press this button to reset the linear time counter in the viewfinder to "0:00:0"

28 DISPLAY Button (only on the remote controller)
Use this button to select the display in the viewfinder

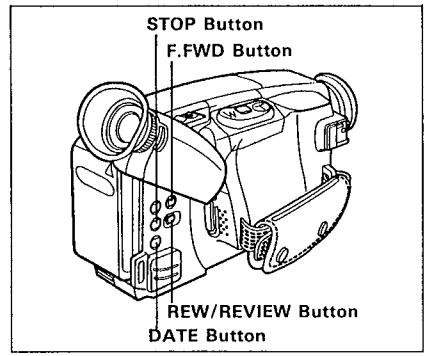
29 AV DUB Button (only on the remote controller)
This button is used to record new audio and video in place of existing audio and video



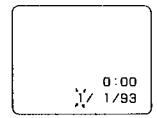
DATE/TIME SETTING

The date and time can be recorded on your tapes to act as a handy reference when viewing them at a later time Use the following procedure to set up this display for the current date and time.
The time backup battery is rechargeable Charge the backup battery every two months Set the OPERATE switch to OFF and connect a charged battery or AC adapter/charger to the camera/recorder for 24 hours. Make sure that the current time is displayed correctly before you start recording

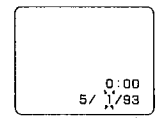
NOTE: The backup battery should be charged every two months If it is not charged periodically, it will be over-discharged and its life will be shortened



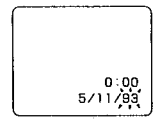
1. Slide the OPERATE switch to "CAMERA" while holding the small red button in the OPERATE switch down.
2. Press DATE button
"0:00" and "1/1/93" appears in the viewfinder and "1" flashes.



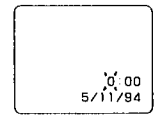
3 Press F FWD button to select correct date. Hold button down to advance rapidly If you go past the date you want to set, press REW/REVIEW button. When the correct date appears, press STOP button.



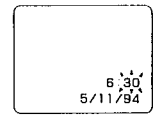
4 Press F FWD button to select correct month Hold button down to advance rapidly If you go past the month you want to set, press REW/REVIEW button When the correct month appears, press STOP button



5. Press F.FWD or REW/REVIEW button to select year, and then press STOP button



6 Press F FWD or REW/REVIEW button to select correct hour, and then press STOP button
7 Press F.FWD or REW/REVIEW button to select correct minute.



8. After setting to the correct minute, press DATE button to change the display and start the internal clock
It is recommended that you press the DATE button to match the time signal

■ To correct date/time after starting the date/time

1 Press and hold DATE button, and then press STOP button. The date starts flashing
2 Correct the incorrect digit by using F.FWD, REW/REVIEW and STOP buttons

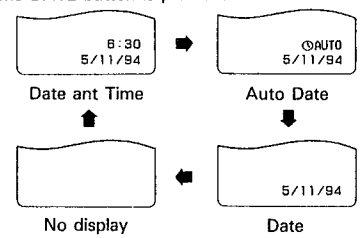
■ To correct date/time during programming

1 Press STOP button repeatedly until the digit that is incorrect flashes.
2 Correct the incorrect digit by using F FWD, REW/REVIEW and STOP buttons

■ To record date/time graphics

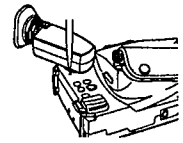
Press DATE button repeatedly to select the required date/time graphics in the viewfinder, then start recording

- The display changes in the following order each time DATE button is pressed.



ENGLISH

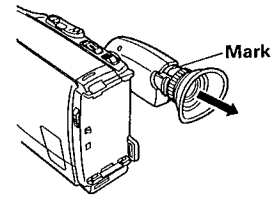
TROUBLESHOOTING

Symptom	Check Point & Correction
Cassette holder cannot be opened when you slide EJECT switch	Connect the power source.
Cassette cannot be inserted into cassette compartment	Load cassette in direction indicated by arrow on cassette
	The cassette window must be towards the outside
Picture does not appear in the viewfinder	Remove the lens cap.
	Slide OPERATE switch to "CAMERA"
The camera/recorder cannot go into the recording mode, even when Start/stop button is pressed	Check the record-protect tab on the cassette. See page 12 for details.
	Set OPERATE switch to "CAMERA" position
	Push the cassette holder embossed PUSH to close it
	The " ▬ " indication in the electronic viewfinder flashes to indicate battery is discharged Try another battery or charge the battery.
PLAY button cannot be engaged.	Set OPERATE switch to "VIDEO" position.
Interference on playback picture. (The TV is connected to the camera/recorder using the RF output adapter)	When you see the playback picture on your TV, adjust fine tuning knob on television set to obtain the best picture
Picture is out of focus Auto-focus does not operate correctly.	Auto-Focus does not operate correctly if a special-effects filter is attached
Power is interrupted	If the record pause mode continues for more than 5 minutes, power is shut off automatically. Press the Start/stop button to restore the power.
Power is not turned on and no button operations are accepted	Remove the power source, and after about one minute, push the reset switch gently using a toothpick, etc until you feel a click The display will be reset. Then set the information again. 
TROUBLE appears in the viewfinder.	Have you moved the camera/recorder or cassette from a cold place to a warm place so that its temperature changed abruptly? If the temperature has changed, remove the cassette and set the OPERATE switch to OFF, then wait for about one hour
	Remove the cassette and then try to reinsert: remove it several times. If the indication is still shown in the viewfinder, use a cleaning tape to clean the heads and replace the cassette.
"DEW" indication flashes in the viewfinder	Condensation on the camera/recorder mechanism — wait until the unit has reached normal room temperature, and condensation has evaporated "DEW" indication will stop flashing.

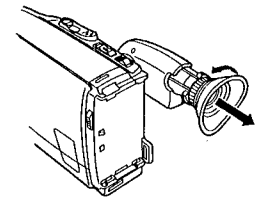
■ CLEANING THE INSIDE OF THE ELECTRONIC VIEWFINDER

If dust or foreign matter adheres inside the viewfinder, clean it by using the following procedure

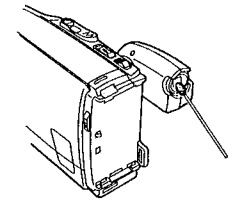
1. Pull out the eye cup to the position where a mark can be seen (up to a half where it is pulled out all the way) The side with the mark should be up.



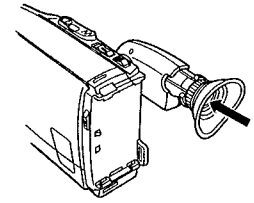
2. Turn the eye cup counter-clockwise until it stops, then pull it out to remove



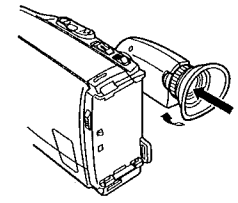
3 Clean the picture tube face and lens
To prevent scratching, use a soft non abrasive cloth, swab or lens cleaning paper



4. Face the rib up as shown below and push the eye cup in until it stops



5. Turn the eye cup clockwise until it stops, then push it in all the way



HITACHI

VM-E53E,E(UK)
E(SW),E(AU)

TK No.6312E

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